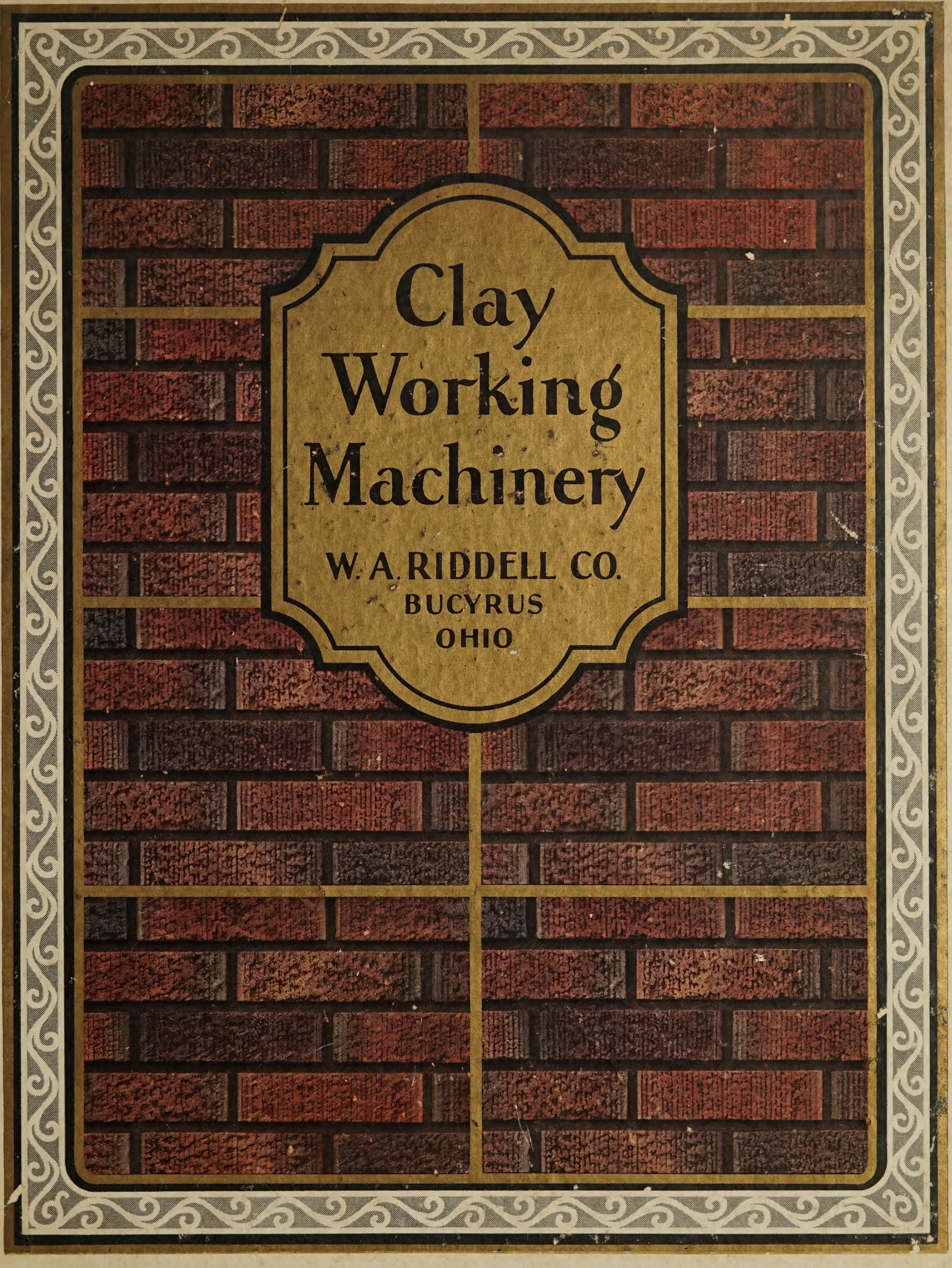

Clay Working Machinery

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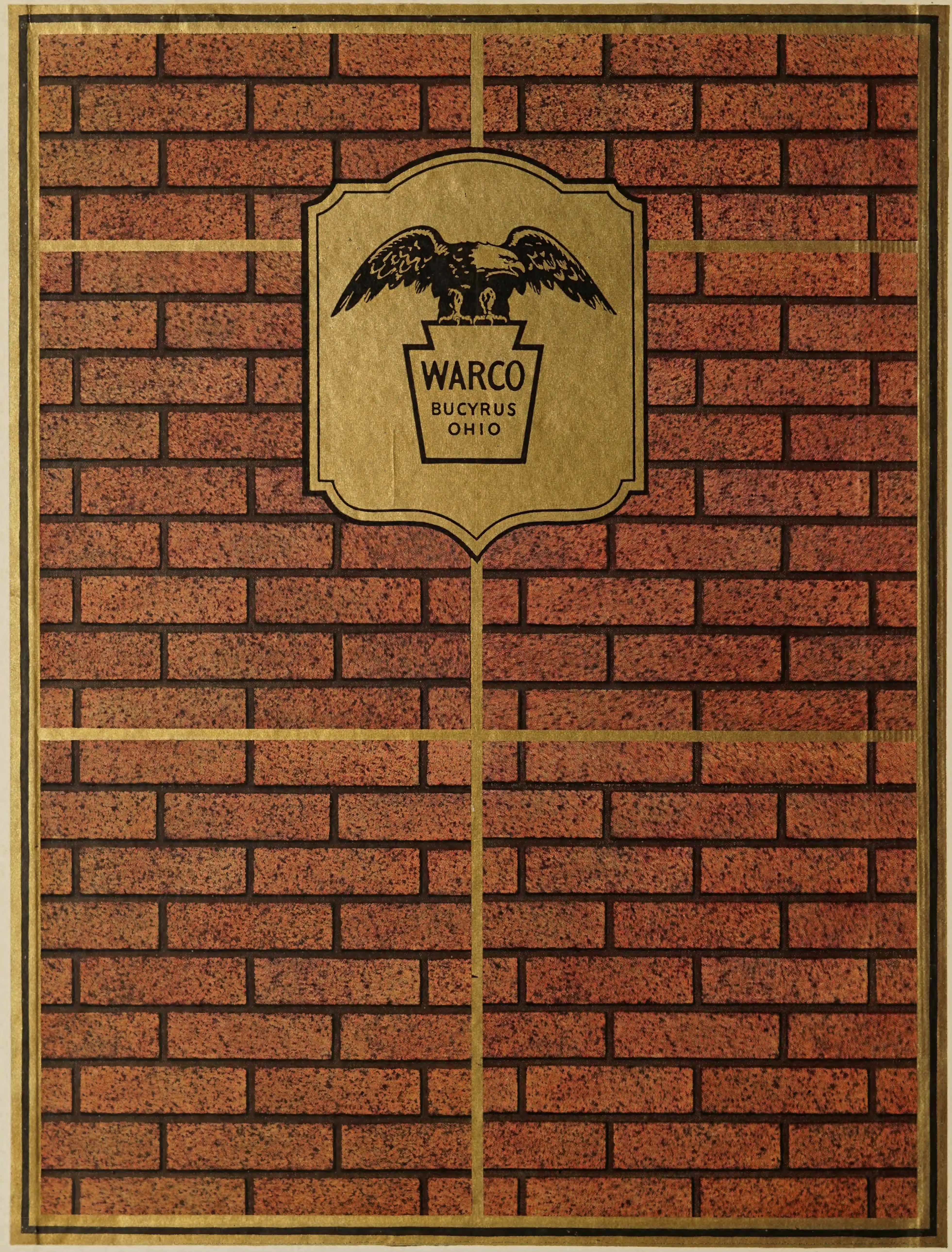

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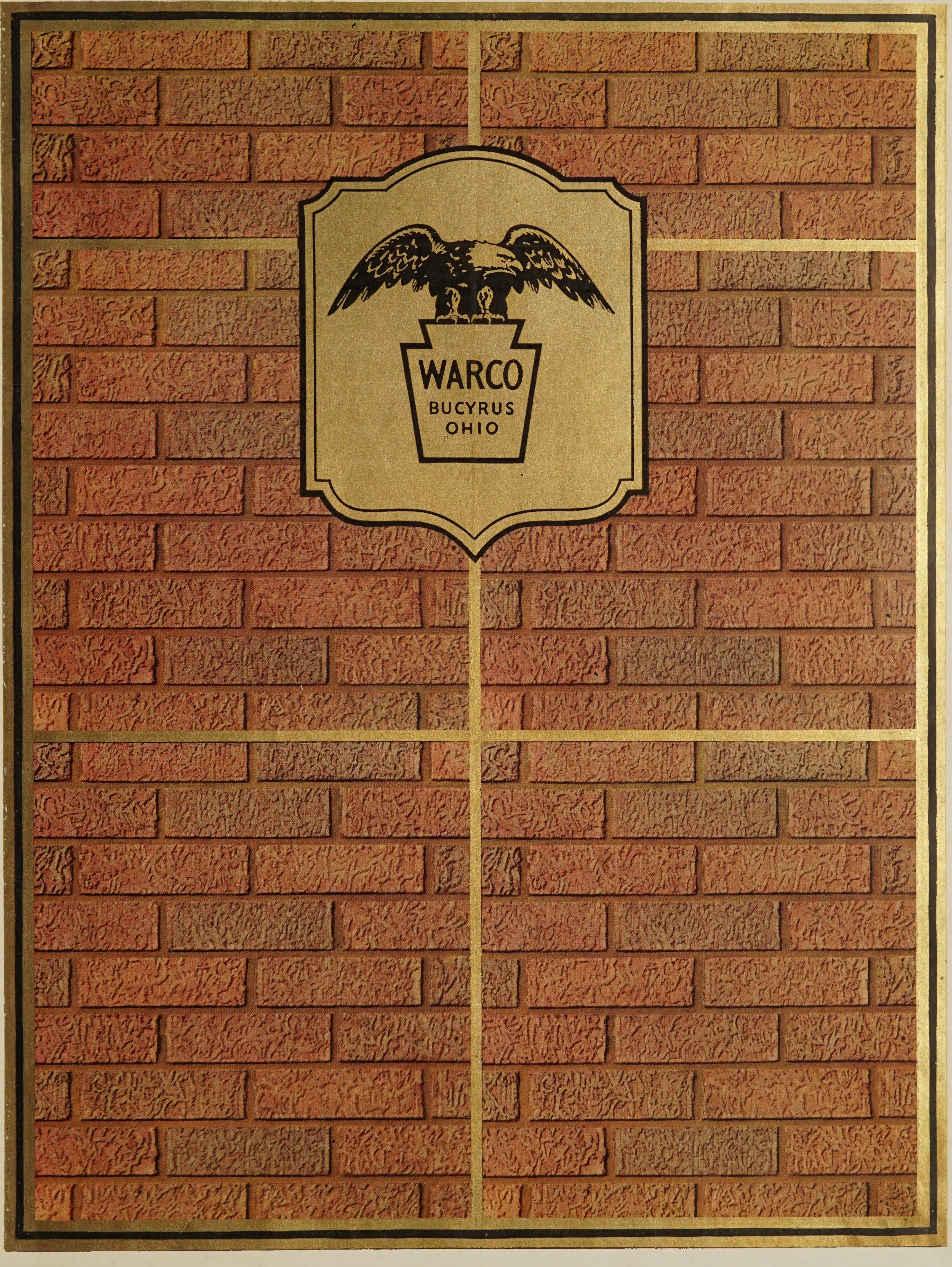

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AMERICAN
CLAY MACHINERY
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The Oldest and Largest Manufacturers of Clay-Working Machinery in the World

EQUIPMENT FOR
Complete Clay-Working Plants
Stiff Mud and Dry Press Brick Machinery
Waste Heat, Radiated Heat and Other Types of Brick Dryers
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Catalogue No. 110

NINETEEN TWENTY-NINE

Builders of the Complete "American" Line of Brick Machinery, Clay-Working Machinery, Hollow Tile, Terra-Cotta, Sewer Pipe, Roofing Tile, Manganese and Carbon Steel Castings, Drain Tile Machinery and other Clay Plant Equipment. We also Build Road Machinery.

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W. A. RIDDELL COMPANY

Successors to
The Hadfield-Penfield Steel Company
The American Clay Machinery Company

BUCYRUS, OHIO

Cable Address:
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Codes Used:
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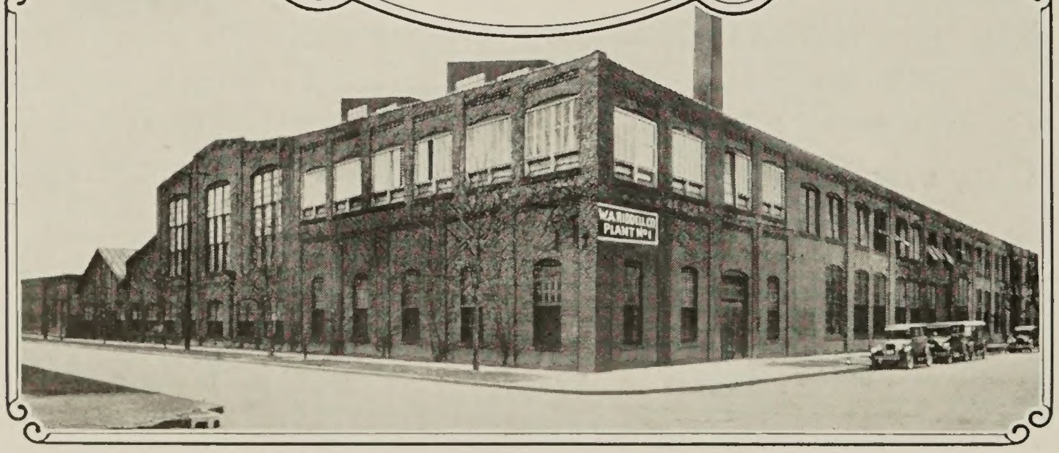
Views of
W. A. Riddell Company Plant No. 1,
(Front above, Rear below) Bucyrus, Ohio.
The Bucyrus factory consists of five plants.



AMERICAN
CLAY MACHINERY
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75 YEARS OF CLAY MACHINERY EXPERIENCE

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INTRODUCTORY

THIS new, No. 110, Catalogue illustrates and describes the complete "American" Line of Clay-Plant Equipment. The parent company building this line was established away back in the fifties of the last century. In its seventy-five years of activity there have been many changes in methods and machinery, but during all those years this company has led in improvements wherever possible.

This catalogue will be found to contain the modern accomplishments of three-quarters of a century of experience.

The organization producing the "American Line" consists of men with long experience in the building of clay-plant equipment.

Though this catalogue illustrates and describes the most modern line of Clay-Working Machinery on the market, we will continue to make improvements wherever and whenever possible, and we pledge ourselves to that end and reserve the right to make such changes as are, in our judgment, advisable.

We invite careful examination of this catalogue and solicit correspondence on any clay-plant subject. If we can serve you in the matter of counsel, advice, engineering, machinery or appliances you are invited to write us fully.

W. A. RIDDELL COMPANY
BUCYRUS, OHIO

AMERICAN
CLAY MACHINERY
. . - SINCE 1854

Clay Testing Department

YOUR profits in the clay business depend largely upon the deposits in your clay bank. Our practice has been to examine into the quality and character of your clay and then determine its fitness for the profitable manufacture of those articles for which your clay is adapted.

If your clay is valueless for one class of clay products it will be a loss of money to try and produce that class of ware. On the other hand, your clay may be unsurpassed for the production of some other class of clay products or may be perfectly satisfactory for making excellent ware by some other process.

It is well to know in advance what you can do and it is to determine this that we have erected and equipped a special clay testing department. Here we will put samples of your clay through the various steps necessary to make a thorough test and will be pleased to have you or your representative present to superintend the testing, or we will make a full report with samples of finished articles if you are unable to be present.

The samples we submit will show you just what you can produce with the same material. If you contemplate going into the clay business this information will be invaluable to you, as your success or failure will depend upon it. If you are already in the business it will assist you in determining whether your present output is up to the highest possible standard, or whether you can not, with greater profit, produce some other class of clay products, or change the process by which your present product is manufactured.

Our Clay Testing Building is constructed of burned clay products with steel and fire-proof roof construction. It has its own power plant, is high and airy, with plenty of light and ventilation. Along one side are installed, as a part of the building, five burning kilns and a dry kiln. These are constructed in the same careful manner as though they were a part of the largest brick-making plant

Our Clay Testing Department

in the country. There is abundant room for the storing of clay to be tested and every provision for the accurate testing, recording and reporting of the results attained from every sample of clay received. While it is our aim to make what the customer desires from his clay, and while we are generally able to do so by reason of the various types of machinery installed in our testing room, we do not recommend the clay for the use desired unless the tests made in our Clay Testing Department show that the clay is suited for that particular class of clay products. Our aim is to give each customer as near an unbiased report on his clay as possible.

Engineering Department

Working hand in hand with our Clay-Testing Department is our engineering force. Having determined the fitness of your clay for the manufacture of clay products, it is only necessary that your plant be properly located, built and equipped. It is by no means a trifling problem to "build a brick yard." Years ago, when a small yard with a few thousand capacity was the rule, it was a simple matter to set up the old horsepower machine and proceed to turn out brick. It's different nowadays, because neither the quantity nor the quality of brick produced by the old method would be considered satisfactory, especially when it was found that the cost of production per thousand closed the markets against the output.

Today the clay-manufacturing business has advanced to such a stage that some of the most able men in the country are found in its ranks. Careful thought and management have entered into this business to such an extent that methods have been revolutionized. No industry has made such rapid strides in so short a time and no industry has a greater future.

Our Engineering Department includes the most advanced and able men in the trade. They are able to look over your conditions and plan an equipment which will make it possible for you to manufacture at the least possible cost. Methods of handling the raw material, the ware in process of manufacturing and the finished product are matters of greatest importance which make the permanent earning power of your plant.

Your plant must embody up-to-date principles and methods in order that you may not only be able to compete with the present plants but in order that you may be assured that the future will not, with its constant development, put you at a disadvantage in competition with other plants.

Our Engineering Department, taken in connection with our Clay-Testing Department is virtually an insurance of your success in the business. We invite you to consult us whether you contemplate a new plant or the remodeling and enlarging of an old one. We solicit a consultation. If such a consultation fails to develop the fact that we can be of assistance to you the matter need go no farther.

We have a greater number of successful plants in operation throughout the country than all other manufacturers and engineers combined. The reason is apparent when you consider that we are not exclusively engineers nor exclusively machine men. We combine the two in order to work out the plans with the sole object of developing successful plants. We build every class of clay-working machinery and have mastered various processes of manufacture from the clay-plant standpoint as well as from the machinery end of it. We are, in consequence, able to plan your plant without bias as we need advocate no special machinery because we have only that kind to sell. We build all classes of machinery and install that which is best for the permanent success of the plant.

Our engineers will be pleased to take up all these points with you. Together we can work out a plan that will be a success and a money maker for you and a satisfactory advertisement for us. We want successful plants to our credit. It is to our interest to have them successful, and they cannot be successful unless the planning of the plant and the selection of the machinery is right. We are therefore always pleased to find a man or men who are desirous of manufacturing clay products on a business basis, because we know that the saving features we have to offer will appeal to such men. We shall be pleased to hear from you on the subject.

Shipping Facilities

From a shipping standpoint our factories are advantageously located, being situated on the two greatest traffic arteries of the country, the Pennsylvania and New York Central systems. There are also electric traction lines which make hourly connection with other steam lines. In express companies we have the American Railway Express Co., besides the Electric Package Company operating over trolley lines. The Western Union and Postal Telegraph Companies, together with the Bell and Independent Telephone Companies, put us in instant touch with the remote corners of the world. Long distance call No. 399 at Bucyrus, Ohio, on either the Bell or Independent lines, will reach our own private switchboard in our general offices. When it is desired that shipments be given a special routing, we should be so advised, otherwise our Traffic Department will use its best judgment, keeping in mind the interests of the customer.

Our Traffic Department

The importance of giving special attention to the handling, routing and rating of shipments, proper presentation and prosecution of claims, etc., is recognized by The W. A. Riddell Company, and the advantages to the customer are obvious in dealing with a firm where such matters are systematically handled by a special department.

Shipments in transit are carefully watched and if delayed are immediately traced and every effort made to locate and hasten delivery.

Claims for loss or damage should be made by the customer, as our responsibility ends when the shipment is delivered to the railway company. However, our organization is at the disposal of our customers, and upon request we will file claims for loss or damage and collect damage where possible. When damage is collected we will credit the account of the customer with the amount collected.

Information furnished as to most direct routing, proper rating, etc., and the resources of the depart ment are instantly and constantly at the customer's service. This service is free to our customers.

Superiority of Clay Products

There are few manufactured articles in this world where the quality can so safely be relied upon, and for which so much can be promised as well-made clay products.

Clay Products Are Fire Proof

The fire-resisting qualities of brick and hollow tile are not equaled in any other material, either made or natural. The excellence, long life and faithfulness of sewer pipe and drain tile are unequaled. In the improvement of streets and roads there is no rival to excellence to No. 1 paving block. Under the intense heat of blast furnaces fire-clay products stand out without a rival, while in pottery the world has never found anything to take its place or equal it in faithfulness.

Wonderful Clay Products

Clay products are little less than wonderful in their simplicity of manufacture, their humbleness of origin and their stability, faithfulness and unrivaled standing in their various fields of usefulness.

So excellent are the qualities of well-made clay products that the manufacturer too often relies upon their superiority to sell them, thus leaving material of much less merit, but better advertised and harder pushed to make a sale.

Make Them Good

Good clay products are never a discredit to the trade, while poorly made or inferior clay products are a decided detriment. In order to eliminate poor quality as much as possible we have embodied in our machinery and equipment those features which will produce the highest per cent of No. 1 product, feeling sure that the clay trade will appreciate that it is better to sell a meritorious product, especially when the cost of manufacture is no higher, than an inferior quality.

Looking for Trouble

If you have trouble in producing a product which is all that you desire, there may be a cause which our Engineering Department can discover and remedy. Such remedies are not necessarily expensive, and to ascertain where the trouble lies is quite frequently of no expense whatever. Our engineers are at your service, as are also the other departments of our organization.

Driving Clay-Working Machinery

By DAVIS BROWN

This article was written by Davis Brown, Chief Engineer of the W. A. Riddell Company, for publication in the July, 1928, Bulletin of the American Ceramic Society and is reprinted here by permission of the Ceramic Society.

ABSTRACT

Illustrating and describing the application of various power transmitting and speed reducing devices with suggestions for further simplifying the methods of applying motors to machines to be driven.

INTRODUCTION

The means for driving machinery is important to every manufacturer of clay ware. As the various mechanical units multiply and become located farther from each other the distribution of power to individual machines becomes more complicated.

Consideration should, therefore, be given to reliability, economy of operation, location, and cost. Any drive which does not stand continuous service or which requires frequent attention is costly; or one which must be so located as to interfere with the flow of material by the shortest route from one place to another, which becomes dangerous to human beings or prevents access to other parts for inspection, servicing, or cleaning, should be avoided. A new plant can easily be planned to give adequate service but it is sometimes difficult to secure when revamping an old one.

SPEED REDUCTION

Transmission losses are unavoidably increased by the addition of necessary speed changing devices between the source of power and the working parts of machinery. The auger in a brick machine, for example, may be found running from 10 to 40 revolutions per minute while the line shaft from which the power is taken may be running from 150 to 300 revolutions per minute or if motor-driven, the motor operates at a speed of from 514 to 1200 revolutions per minute. The problem is to transmit power to the auger at the desired speed from the line shaft or the motor with the least amount of loss by friction.

The source of the friction in transmission devices is the shaft bearings, the sliding on each other of the teeth of gears used in the reduction of speed from one to the other, and friction within belts as they bend around pulleys and straighten out again.

It is obvious that changes in speed should be accomplished with the fewest possible number of parts consistent with proper design, meaning that shafting should be of ample size and supported at proper intervals to avoid excessive deflection; gearing should be of correct proportions, accurately made from as hard a material as consistent with strength and workability; the bearings should be as nearly frictionless as possible, the belting not too thick, and the pulleys of ample diameter; all are consistent with a high safety factor and tending to lower the transmission losses and should be considered as a whole.

SPEED VARIATION

There are certain machines used in the manufacture of clay ware that function well at known speeds. There are other machines whose speed cannot readily be predetermined and require flexibility in changing of speeds, with considerable latitude in providing a sufficient amount of power; *e.g.*, for all machinery used for grinding and transporting material the speeds are well standardized. The auger machine and pug mill are the main exceptions. Generally, the proper basis for determining the size of auger machine is the cross-section dimensions of the ware to be made, while quantity determines the proper speed to drive the auger. Another variable factor is the clay itself; some clays require that the auger be driven at a faster speed in order to obtain the same production.

Manufacturers of clay-working machinery, for example, find that one particular size of machine is making as low as 3000 brick per hour in one plant while a duplicate of that machine is making 10,000 brick per hour in another plant, accomplished by driving the auger at different speeds.

It is to meet the various requirements as to quantity of output and the varying character of the materials that so wide a variation in speed of the auger or screw is imperative.

The foregoing statements have a bearing on the selection of a suitable means for driving the machinery.

SELECTION OF DRIVE

There are, in reality, but three kinds of drives or three different ways for driving machinery: (1) by grouping all machines so as to be driven from a common line shaft, (2) by individual motor drives for each machine, or (3) by some combination of the two methods.

The following description of the various methods in use in a typical small brick plant has been selected for the purpose of illustrating these drives.

BELT DRIVEN PLANT

In this type shown in Fig. 1, the power may be furnished by a steam engine and boiler, gas or oil engine, electric motor or water power.

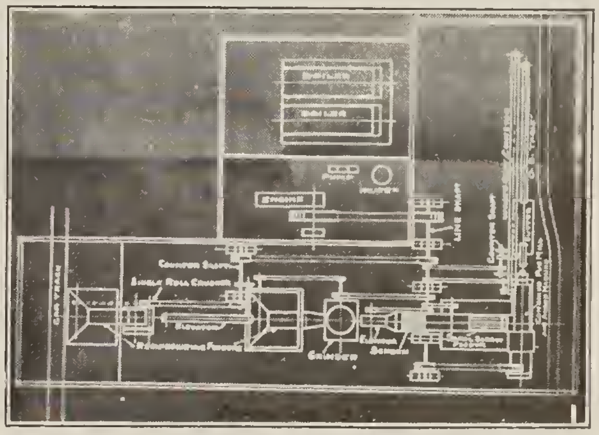


Fig. 1—Plan view.

The grinding is done in two stages. The crusher is fed by a reciprocating feeder discharged to an elevator, is elevated to a bin, delivered to the grinder by means of a reciprocating feeder and elevated to a storage bin from which it is delivered to the combined machine by means of a spiral feeder or a disk feeder.

The line shaft is driven by means of a belt and in turn drives the grinder combined machine, spiral feeder, elevator, screen, (if belt driven) the counter shaft, the waste-clay conveyer, and the automatic cutter. The counter shaft drives the reciprocating feeder, crusher and elevator, while the second reciprocating feeder is driven from the grinder. It is permissible to drive the reciprocating feeder which supplies the single roll crusher from the crusher shaft and the reciprocating feeder which supplies the grinder from drive shaft of grinder, but it is necessary to have provisions for stopping each feeder without stopping the machine which it supplies with material; all other machines should be driven from the line shaft or the counter shaft.

The drive for this installation requires five line shaft bearings, two bearings for the counter shaft, and ten belts. There is a small counter shaft for driving the automatic cutter which may also be used to drive a waste clay elevator, conveyer, and suitable feeder.

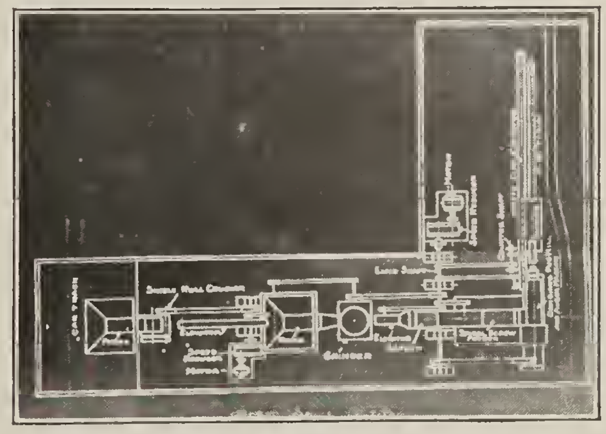


Fig. 2.—Plan view.

The cutter is frequently driven from the auger machine by means of a shaft near the floor line and passing the machine. Why this dangerous obstruction is tolerated is hard to say, yet it is common practice. A better and safer drive for this piece of machinery is from an overhead counter shaft or from a shaft located below the floor line and properly covered.

The same plant may have the machinery divided into two groups. (See Figs. 2 and 3.)

The line shafts are driven by means of motors through speed reducers; belts may be substituted for speed reducers and the line shaft may be driven from the center or either end; with this drive there are eight belts, four main line shaft bearings, and two small line shaft bearings.

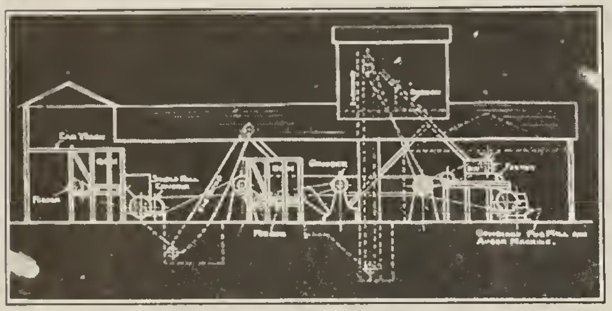


Fig. 3.—End elevation.

An individual motor drive for each machine and all driven through various speed reducing devices is another variation. (See Fig. 4.)

For the crusher a belt of some sort can be used, or if a geared speed reducer is used a flexible coupling having springs for cushioning the shocks and preventing them reaching the gearing or the motor is desirable.

The reciprocating feeders are driven through a geared speed reducer, the elevators through the worm gear drive; the grinder is driven direct, having been designed for that purpose. In this case, a slip ring or a high resistance type motor is necessary unless a friction cut-off coupling is used between the motor and the grinder.

The spiral screw feeder is driven by means of a worm gear drive and the combined pug mill and auger machine through a speed reducer and friction cut-off coupling. The cutter is motor driven through a gear reducer and the waste clay conveyer by means of a worm gear drive.

In choosing a motor the starting load must be given consideration and a motor must be selected that will either start the machine from rest when fully loaded or can be connected to the machine through a friction cut-off coupling.

The advantages of belts for driving machinery over direct connection are: (1) they slide when the machinery is greatly overloaded (2) they permit greater flexibility when it becomes necessary to alter the speed of the machine which it drives; (3) friction losses within the belt itself (provided its thickness is not too great, the width is sufficient for the load, and pulleys are of sufficient diameter) are believed to be very low, varying greatly with different kinds of belts; the more flexible the belt the lower the loss.

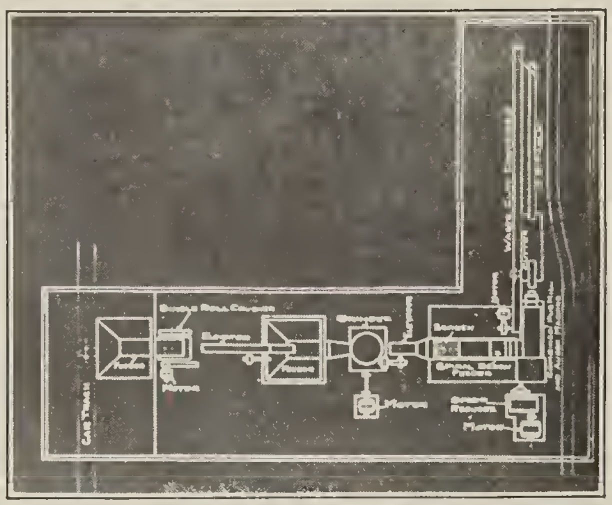


Fig. 4.—Plan view.

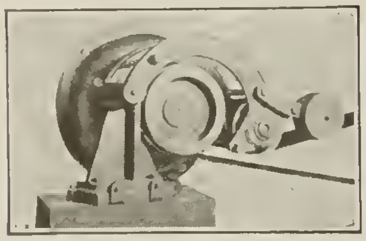


Fig. 5.—Short belt drive with weighted idler.

The disadvantages are that they require much valuable room and when stressed beyond their normal capacity require frequent attention.

Crossed belts are frequently a necessary evil but with the proper distance between shaft centers and the belt not overloaded, the disadvantages are not serious. Wherever possible the drive should be so planned as to have the slackside of the belt the top side.

There are some forms of short-belt drives, one of which has a weighted idler to supply the necessary tension within the belt, shown in Fig. 5. These short-belt drives permit a higher reduction in speed ratios by increasing the arc of contact on the smaller pulley and tension is automatically held uniform. This drive requires a belt that is quite flexible, like leather or rubber; it is known as the "Lenix" drive and will work with either a horizontal or vertical belt.

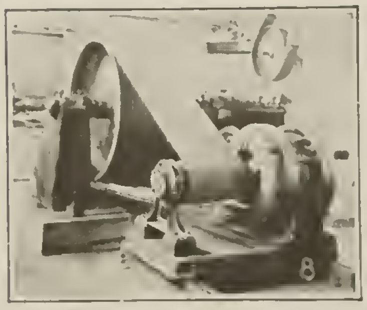


Fig. 6.—"Texrope" short belt drive.

Another short-belt drive, known as "Texrope" (Fig. 6) consists of two grooved pulleys with an endless belt for each groove. The belt is triangular in shape with the contact on the sides of the grooves. From observations made of this drive in actual use, it seems to be giving highly satisfactory service.

The silent chain drive (Fig. 7), one of the oldest drives, is well known, has given good service, and for maximum durability should be run in an oil tight, dust-proof case.

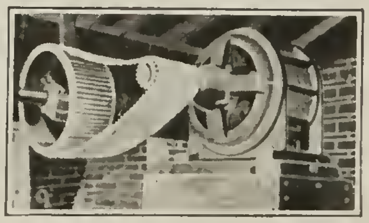


Fig. 7.—Silent chain drive

Gear reducers fit in nicely for many direct connected drives (Fig. 8). They do not increase the width dimension which is generally the most valuable and when herringbone or helical type gears and roller bearings are used, friction losses are low and they are practically vibrationless. For comparatively high ratios of speed reduction the worm gear (Fig. 9) is coming into greater use for units up to 100 H.P. Details of construction have been improved from time to time so that it may be relied upon when the proper selection has been made and the right kind of lubrication provided.

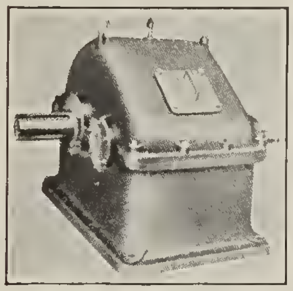


Fig. 8.—Gear reducer.

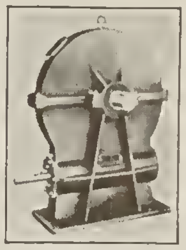


Fig. 9.—Worm gear.

Any one of these drives may safely be resorted to for obtaining the necessary speed reduction and for transmitting power, provided the load and speed can be predetermined and a liberal safety factor adhered to. The number of machines that are being driven direct from a motor is increasing. Manufacturers of clay-working machinery are progressive; therefore further simplification in the application of the motor to the machine to be driven can be expected. In fact, a beginning has already been made.

Figure 10 is a combined machine driven by a motor through a gear reducer and a friction cut-off coupling while Fig. 11 is a similar machine driven through a pair of gears. The gear is mounted on the machine shaft and the pinion on the motor shaft; the latter is a simple and direct method with few parts and is offered for consideration.

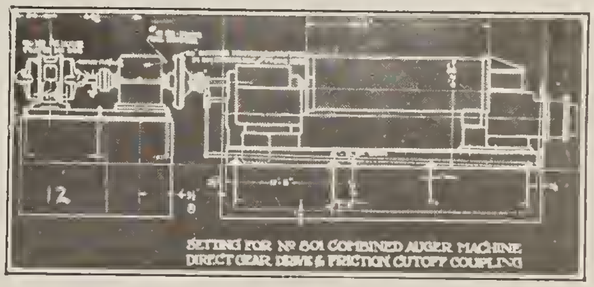

12
SETTING FOR Nº 601 COMBINED AUGER MACHINE
DIRECT GEAR DRIVE & FRICTION CUTOFF COUPLING
Fig. 10.

Figure 12 is a grinder driven by means of a direct connected motor. The motor is on a separate foundation and there is a short piece of shafting and two flexible couplings between the grinder and the motor, which works admirably. The necessity of the short shaft and extra coupling is undetermined.

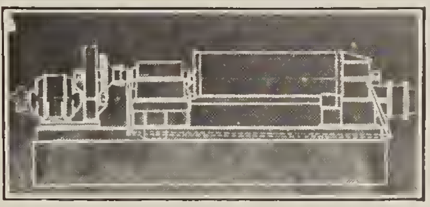


Fig. 11.

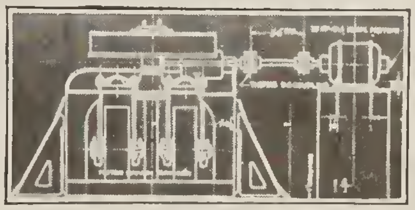


Fig. 12.—Grinder driven by means of direct connected motor.

In Fig. 13 a pan with direct connected motor is shown mounted on the cross-frame. With care in installing the motor so as to obtain correct alignment and proper mesh of gears, this works out very well.

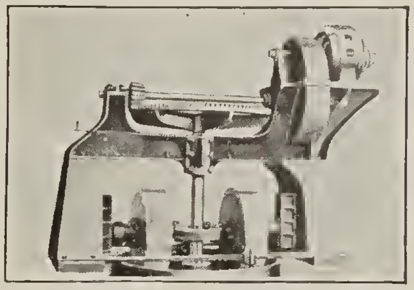


Fig. 13.—Pan with direct connected motor mounted on cross frame.

A motor driven drum or hoist is shown in Fig. 14 because where this device is used for bringing in raw materials it is generally located in a remote part of the plant and the motor furnishes an ideal form of drive.

In selecting individual motor drives both the manufacturer of the machinery to be driven and a competent electrical engineer should be freely consulted as there are certain points to be considered that if taken care of properly at the start will result in efficient operation. The most difficult item is to predetermine the correct-sized motor to use for each machine; in fact the variables are such that provision should always be made for power factor correction by installing a synchronous motor for one of the drives. The auger machine is a very good place to use this type of motor.

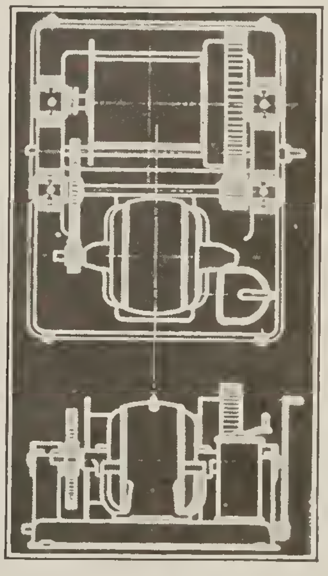
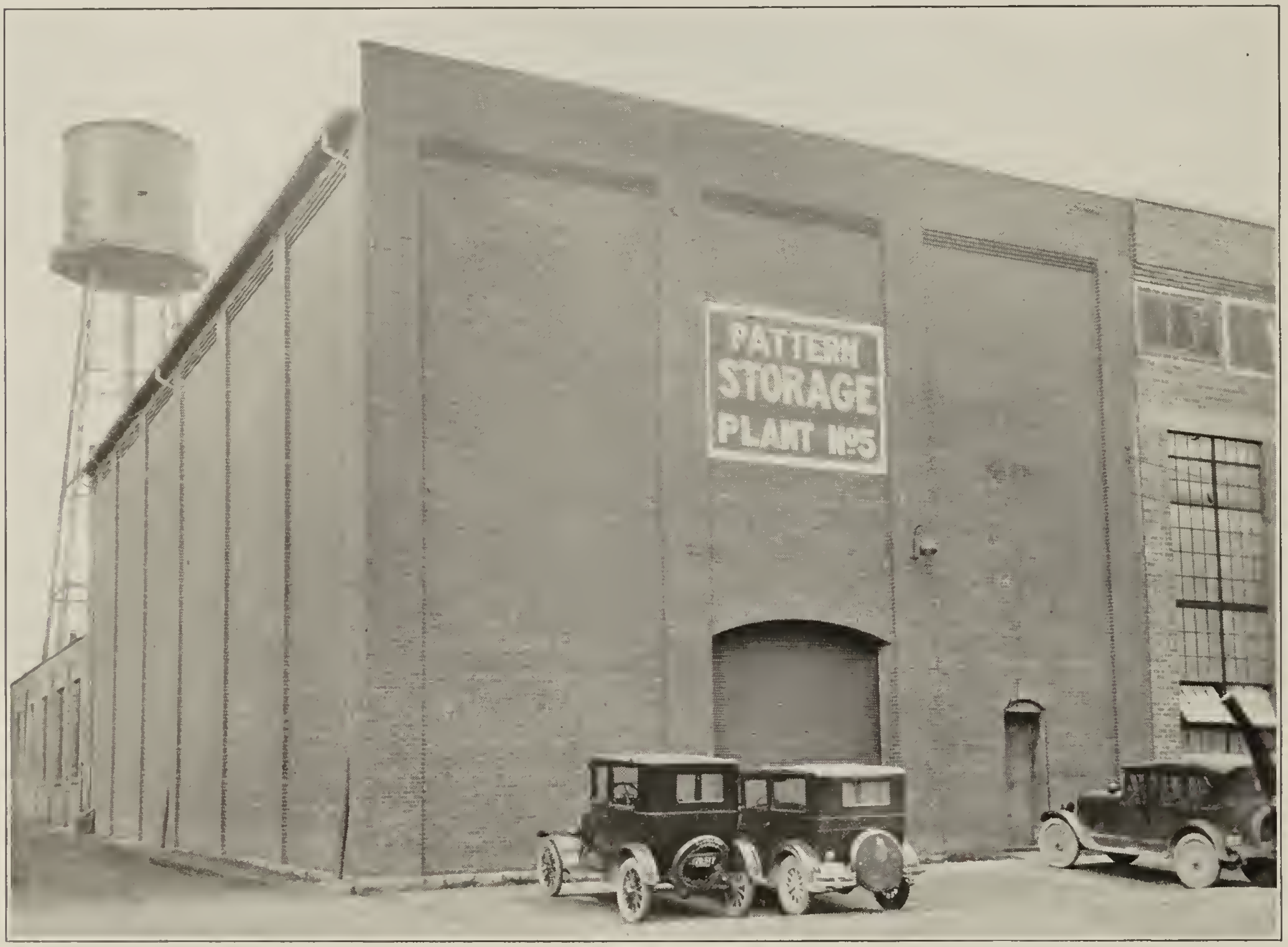


Fig. 14.—Motor driven rum or hoist.

In transmitting power to machinery it is advisable to do so in the most direct and simple method with the fewest number of parts consistent with obtaining desired results. Therefore as previously stated, further simplification from time to time is certain.

Machinery Plus—



Riddell Co. Fireproof Pattern Storage

WHEN you buy machinery there is something more to think about than just machinery and prices.

We had an evidence of this just the other day when a repair order came in for a dry pan part to be sent in a hurry.

When we came to put the order into the factory, it was found that the pan in question was built in 1892 and yet the pattern necessary to furnish that repair part was quickly available, because of our practice of retaining patterns, protecting them in every way possible and keeping an accurate record and check, all of which is to the decided advantage and interest of the customer. In this instance the machine in question was thirty-six years old. Other newer type pans had been added to the line and the old fellow has not been built and sold for a generation, and yet, the patterns have been as carefully safeguarded as though it were a new model and the user of that obsolete type of machine gets prompt and satisfactory service.

This guarding of the interests of the customer is just one of the "Plus" items which go with the sale of "American" Clay Working Machinery and is worthy of consideration on the part of the customer. Our pattern storage building in which patterns are housed, is built of burned clay products. It is devoid of windows, as a protection against fire. All doors are steel and every precaution is taken to insure the safety of patterns. Keep this in mind when considering the purchase of equipment.

W. A. RIDDELL COMPANY

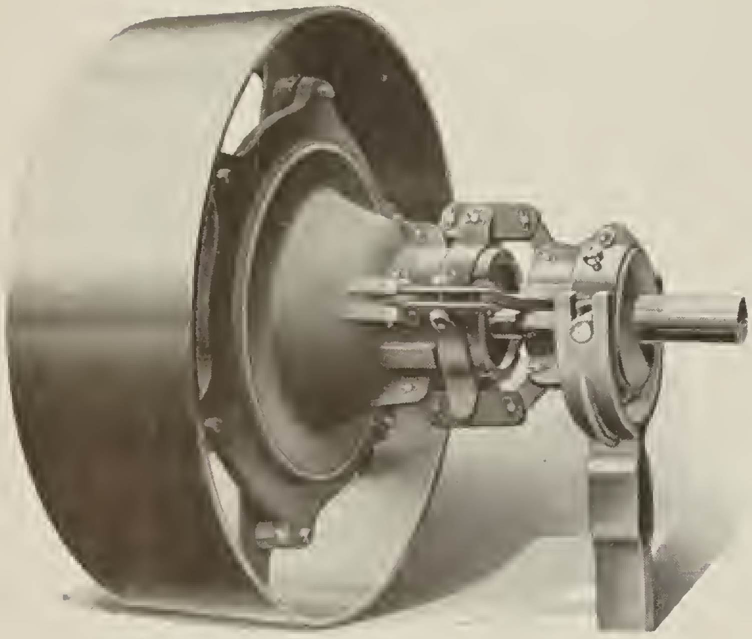
BUCYRUS OHIO

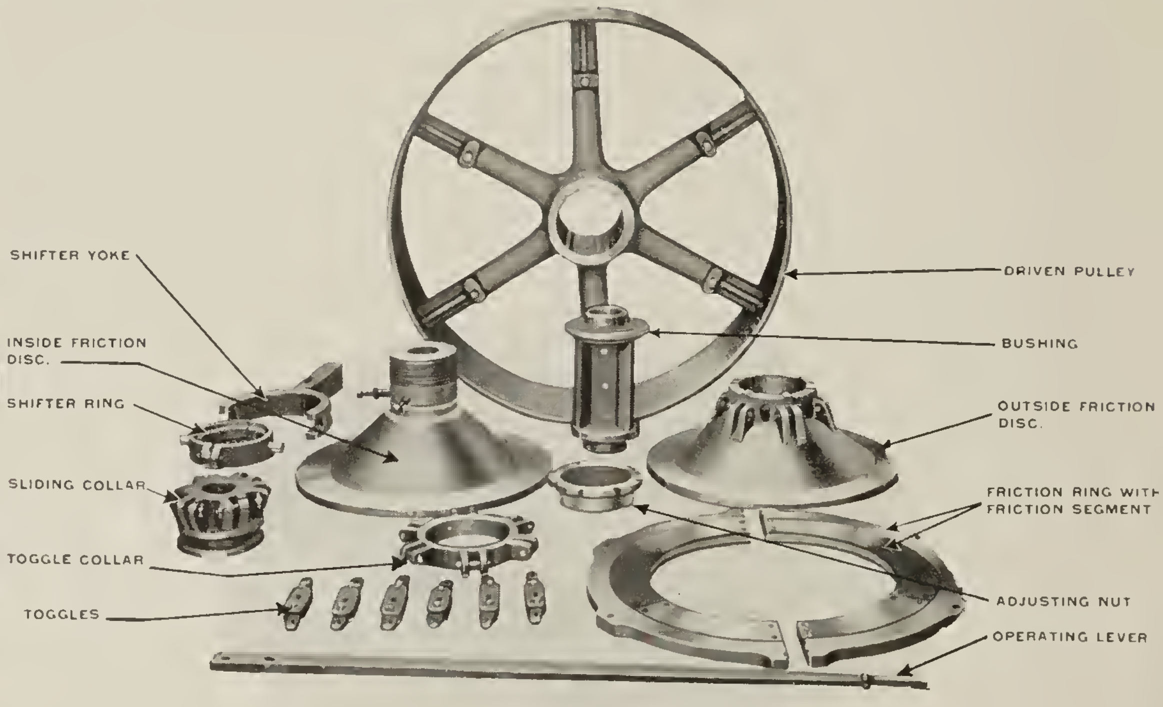
Brick and Clay Manufacturers should give careful consideration to the fact that a High Quality Manganese Steel is now available for their machinery. We can supply Muller Tires, Screen Plates, Muller and Tread Plates, Gears and Pinions; Chains—Detachable Link and Pin Types, interchangeable with other standard make, Sprocket Wheels, Steam Shovel Parts, Teeth, Dippers, Rack Pinion, Industrial Car Wheels, Pug Mill Knives, solid and with renewable tip, Pan Rims and Scrapers, and there is a real economy in the use of this metal. A big saving is assured as prices are on a pre-war basis now.

W. A. RIDDELL CO.

BUCYRUS, OHIO

Bucyrus Disc-Type Friction-Clutch





AFTER years of experience in building friction-clutches for use in connection with clay-working machinery, we have developed the Bucyrus Disc Type Friction Clutch, which is now used on our standard line of machinery.

This clutch is simple in construction, and any ordinary mechanic will understand the mechanism of the clutch at a glance. The general design of the clutch permits of high speed with safety, as no part is affected by centrifugal action.

The adjustment for wear is entirely by means of one adjusting nut, which gives uniform pressure on all parts of the friction surfaces.

The positive action of the double-toggle movement in both directions engages and disengages the clutch without the use of springs and makes it possible to operate the clutch by means of an ordinary hand lever.

The friction surfaces are absolutely dust-proof, the friction plate is lined on both sides with fiber segments, and may be removed for relining without disturbing other parts of the clutch. The various parts of the clutch are machined and finished to templates and are interchangeable.

Each clutch is thoroughly inspected in our factory before being shipped.

WARCO
BUCYRUS
OHIO

Auger Machine Department

American Auger Machines

THE "American Line" of Auger Machines is complete to take care of any range in capacity desired. In design they are all that could be asked. In building they are a combination of the best of facilities, material and workmanship.

The high quality of the line prevents numerous delays and annoyances and insures continuous and satisfactory operation so far as advanced machine construction can assure.

In the daily output from these machines, both in quantity and quality, is reflected the excellence of design and the quality of construction.

In bearings, shafting, gears and augers there is a quality of material which does much to keep the machines free from troubles and well up in production.

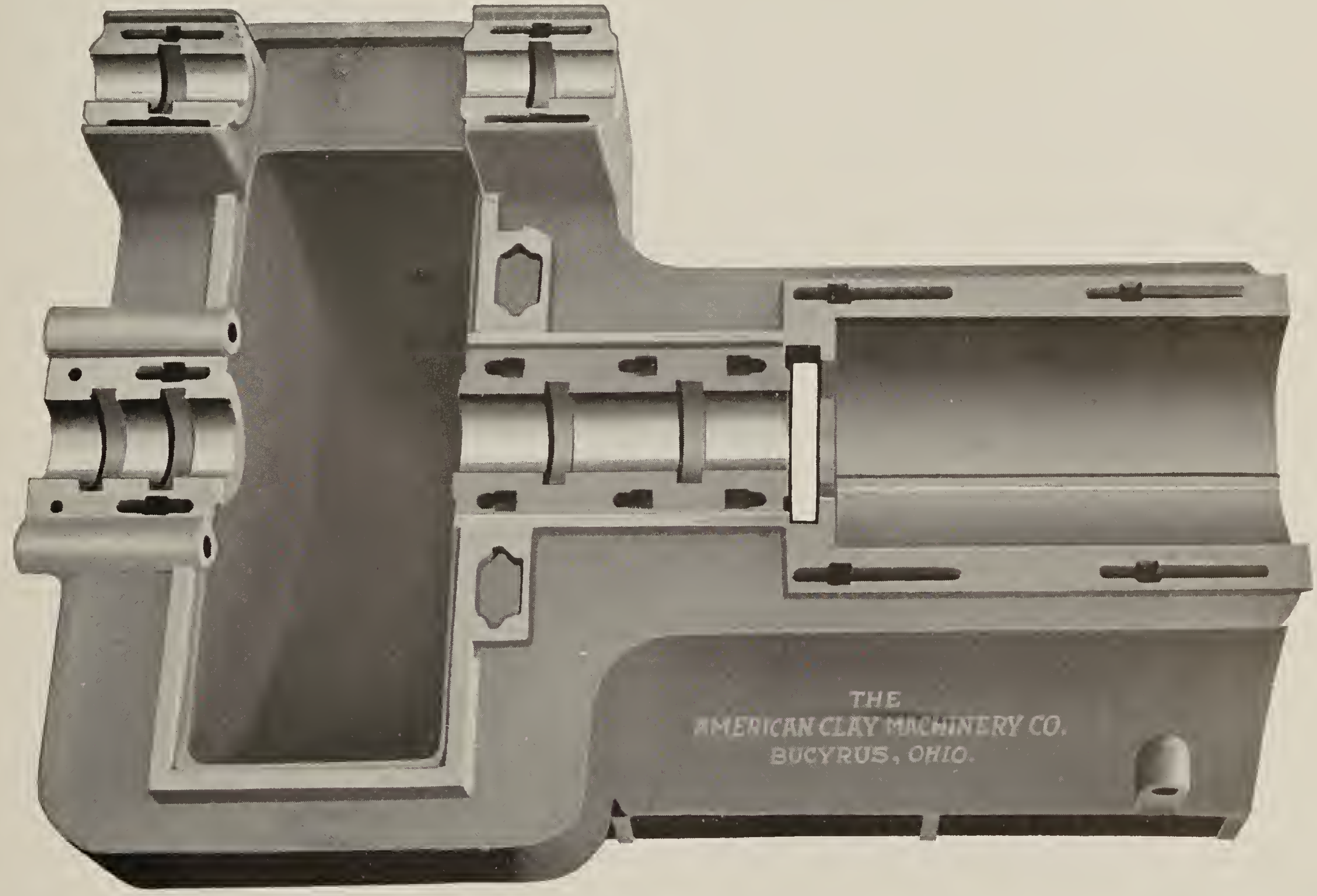
One-piece gear frames insure a rigid and substantial setting necessary to eliminate troubles. The gears are run in baths of oil. There is an ample end thrust bearing with force feeder in the hopper and ring oiling shaft bearing.

Provision is made to supply an expressing auger properly proportioned to the size of material to be made and the barrel of the machine is lined with special wear-resisting metal lining.

We are always glad to counsel and advise where there are special needs and correspondence is solicited.

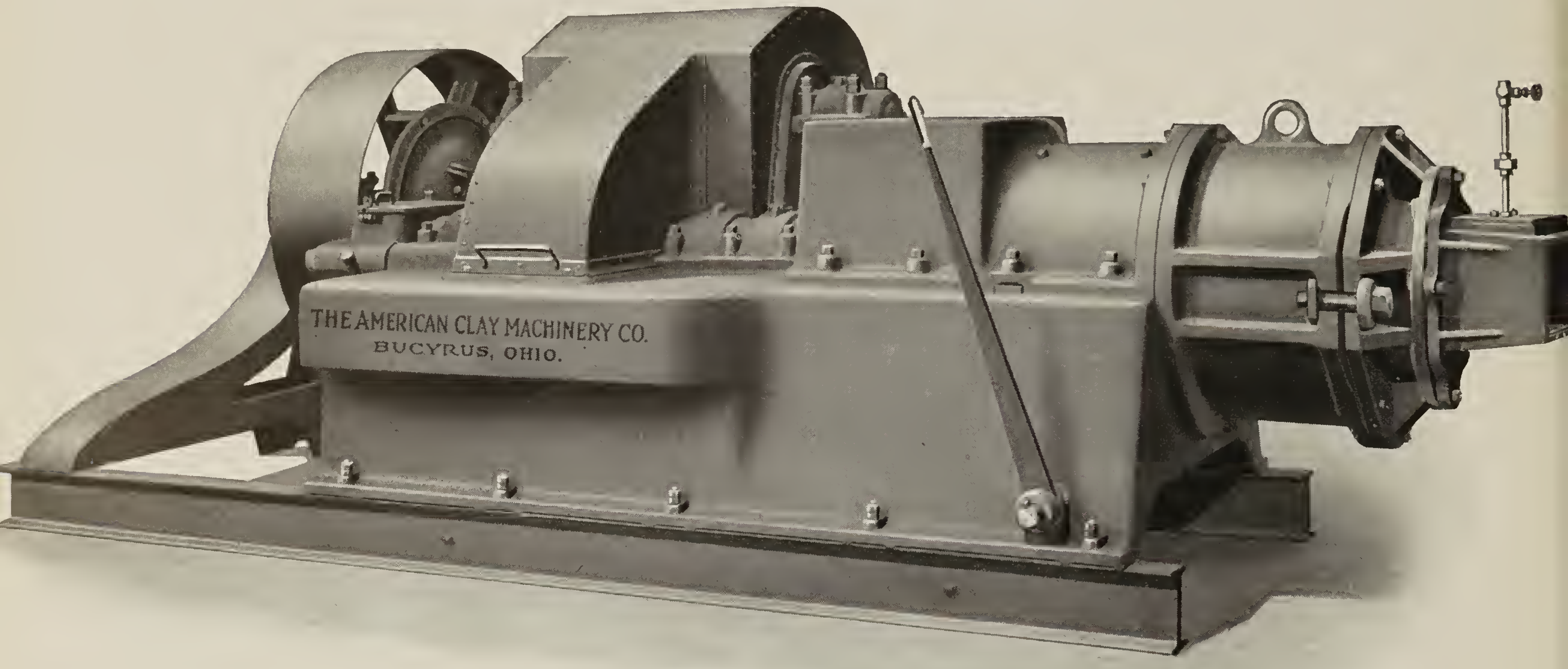
ONE of the big features of our American Auger Machines is the massive one-piece gear frame. This massive frame includes the whole base casting, and the shaft bearings are a part of this base, insuring perfect alignment. This base casting is made hollow, and in this base cavity we have arranged an oil reservoir, so that the gearing runs in oil, insuring perfect lubrication and saving both in constant attention to oiling and the danger of neglect.

These features mean much in the life of your machine and in the simplicity of its operation. They are like many other features of the American line—of greatest economic value.



One-Piece Gear Frame Casting Showing Oil Reservoir for Gears
and Ring Oiling Bearings for Shafts.

American No. 329 Auger Machine



This machine is designed for the manufacture of building brick, fire brick and street paving blocks, also hollow building blocks and fire proofing, in all sizes.

RATED CAPACITY PER HOUR

Building Brick, 10,000 to 15,000 per hour.

Street Paving Blocks, 7,500 to 10,000 per hour.

Fire Proofing or Hollow Blocks, 10 to 15 tons per hour.

The capacity is governed by speed at which the pulley is driven, nature and character of clay, size and kind of ware manufactured, and by management.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearings and forming an oil reservoir for the gears, also forming the lower half of the clay cylinder.

Shafts

The auger shaft is forged steel turned to 6½″ diameter in bearings and wheel fit, 5″ hex for sectional knives in clay cylinder, intermediate shaft is 5″ diameter and the driving shaft is 4½″ diameter.

Bearings

The machine is fitted with ring oiling babbitted bearings. Bearings on the auger shaft are 20½″ long. On the driving and intermediate shafts they are 13″ long. The independent self-aligning, self-oiling end thrust bearing is 12″ diameter.

Gears

The gears are cut steel, driving pinion 10″ diameter, 2¼″ pitch, 8″ face, intermediate gear 24¾″ diameter, 2¼″ pitch, 8″ face, intermediate pinion 9½″ diameter, 2½″ pitch, 10″ face, master gear 39¾″ diameter, 2½″ pitch, 10″ face, ratio of gearing 10.5 to 1.

Augers

The machine is fitted with augers having a chilled wearing surface and with either inserted or sectional knives, according to the service desired. The standard expressing auger is 14½″ diameter. Machine may be fitted with an expressing auger 12″ diameter for small work, or a 20″ and 27″ expressing auger for large work. The augers are inserted or removed from the front of the machine.

Liners

The clay cylinder of this machine is fitted with sectional removable liners throughout its entire length. Tapering sectional liners are used around the expressing auger, making it possible to insert new sections to compensate for the wear on the auger and keep it tightly encased to secure the greatest efficiency. All liners are inserted or removed from the front of the machine.

Driving Pulley

Machine is furnished with a Bucyrus Disc-Type friction clutch driving pulley 48″ diameter, 16″ face.

Speed

Speed of driving pulley 150 R.P.M. to 250 R.P.M., according to capacity desired and character of work.

Power

Power required to operate this machine will vary from 50 H.P., to 100 H.P. according to capacity, kind of ware manufactured and character of material used.

Weight

20,720 pounds, without dies.

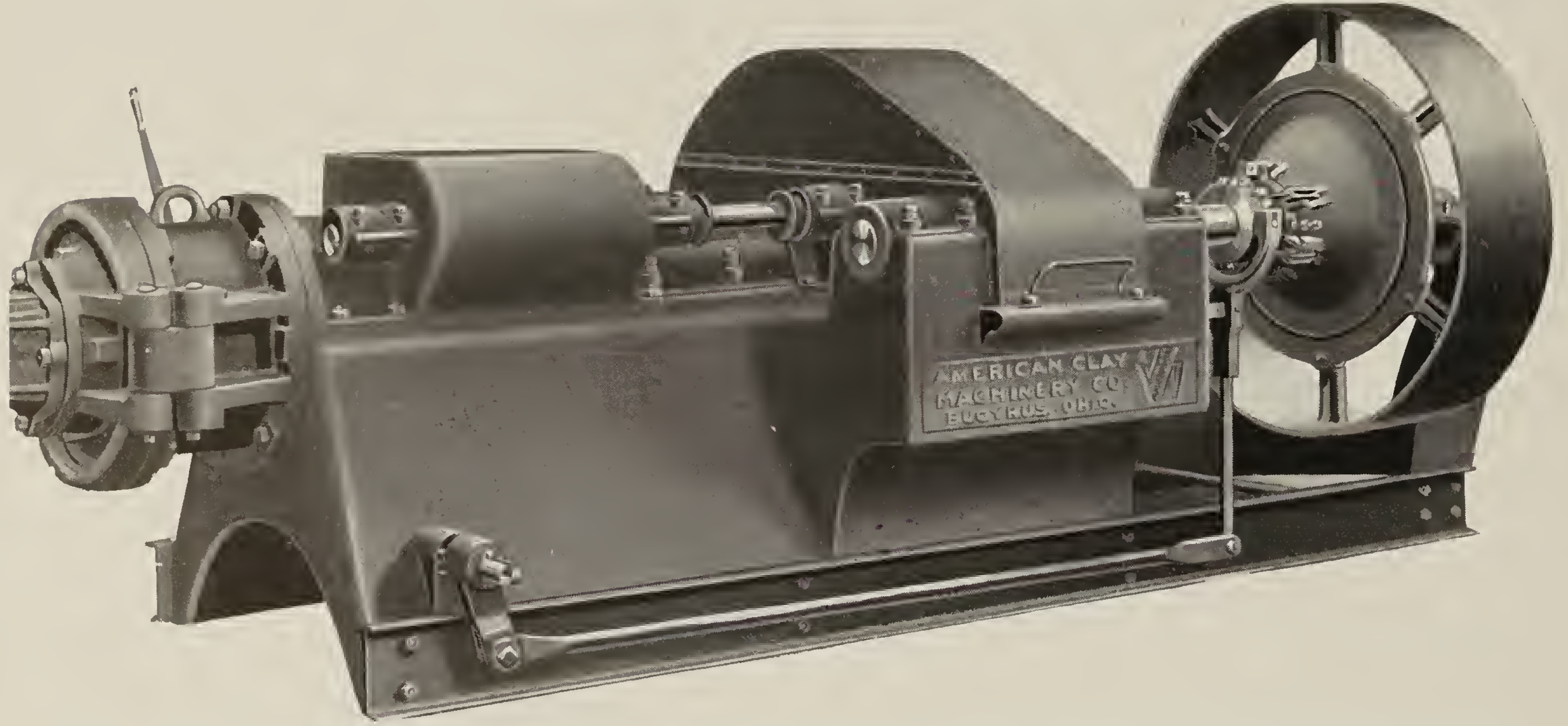
DIMENSIONS

Length over all	16′ 1″
Length of sills	13′ 8″
Length from center of hopper to die	5′ 5½″
Length from center of hopper to center of driving pulley	8′ 3⅛″
Width over all	7′ 10″
Width over sills	4′ 8″
Height over all	5′ 6⅝″
Height to top of hopper	4′ 4″
Height to center of machine	3′ 2½″

THIS BRICK HOUSE HAS GRACEFUL, SIMPLE DIGNITY

Brick meets the requirements of every building plan—and offers possibilities for beautiful and unusual treatment unsurpassed by any other material.

American No. 290 Auger Machine



This machine is designed for the manufacture of building brick, fire brick and street paving blocks, also hollow building blocks and fire proofing, in all sizes.

RATED CAPACITY PER HOUR

Building Brick, 10,000 to 15,000 per hour.

Fire Proofing or Hollow Blocks, 10 to 15 tons per hour.

The capacity is governed by speed at which the pulley is driven, nature and character of clay, size and kind of ware manufactured and by management.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearings and forming an oil reservoir for the gears, also forming the lower half of the clay cylinder.

Shafts

The auger shaft is forged steel turned to 6½″ in diameter; the driving shaft is 4½″ diameter and the shaft of the hopper feeder is 2½″ diameter.

Bearings

The machine is fitted with ring oiling babbitted bearings. Bearings on the auger shaft are 14½″ and 26″ long. On the driving shaft they are 12″ long and on the hopper feeder shaft they are 7½″ long. The independent self-aligning, self-oiling end thrust bearing is 12″ diameter.

Gears

The gears are cut steel, master gear is 9″ face and has 71 teeth, driving pinion has 14 teeth, ratio 5 to 1. They are encased and run in a bath of oil. Gears for the hopper feeder are 4″ face, and have 42 teeth.

Augers

The machine is fitted with a continuous auger having a chilled wearing surface. The standard expressing auger is 12″ diameter. Machine may be fitted with an expressing auger 14″ diameter, or a 16″ expressing auger for large work. The augers are inserted or removed from the front of the machine.

Liners

The clay cylinder of this machine is fitted with sectional removable liners throughout its entire length. Tapering sectional liners are used around the expressing auger, making it possible to insert new sections to compensate for the wear on the auger and keep it tightly encased to secure the greatest efficiency. All liners are inserted or removed from the front of the machine.

Hopper Feeder

The hopper feeder is 11⅝″ diameter, fitted with reversible spring steel blades. The hub is split so that the feeder can be removed through the hopper of the machine.

Driving Pulley

Machine is furnished with a Bucyrus Disc-Type friction clutch driving pulley 60″ diameter, 14″ face.

Speed

Speed of driving pulley is 100 R.P.M. to 200 R.P.M., according to the capacity desired and character of work.

Power

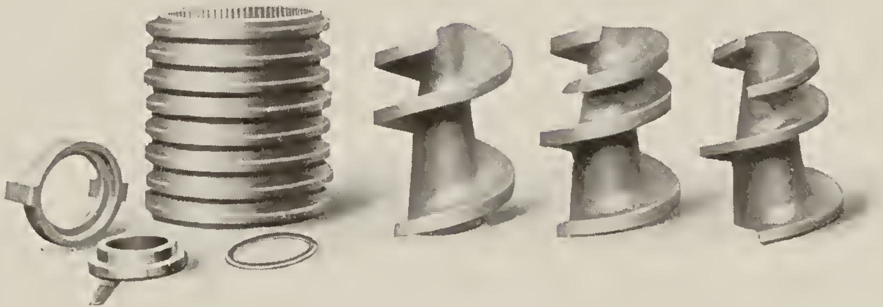
Power required to operate this machine will vary from 40 H.P. to 75 H.P., according to capacity, kind of ware manufactured and character of material used.

Weight

16,335 pounds, without dies.

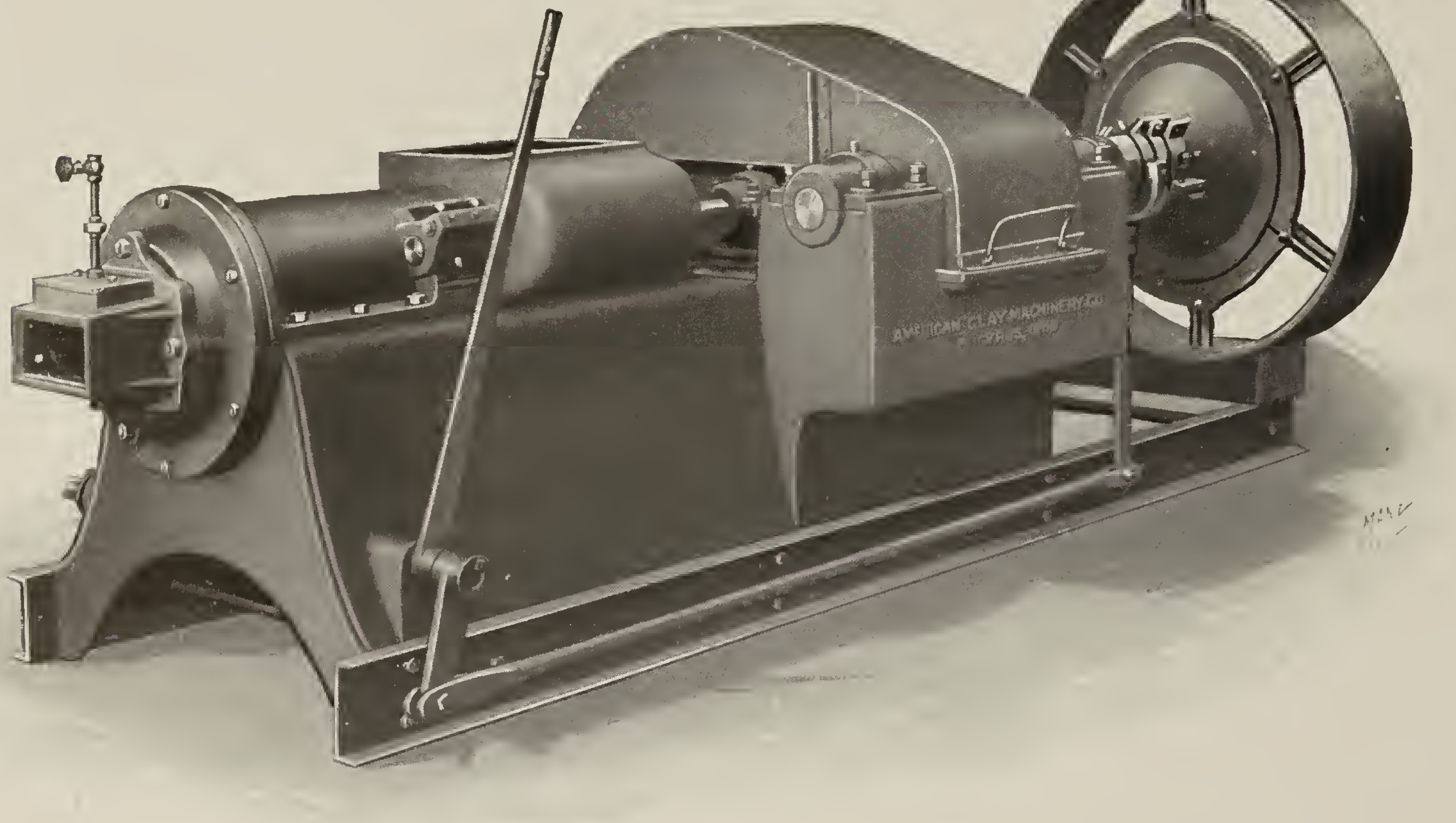
DIMENSIONS

Length over all	15′ 0″
Length of sills	12′ 6″
Length from center of hopper to die	3′ 6″
Length from center of hopper to center of driving pulley	8′ 7″
Width over all	6′ 5″
Width over sills	4′ 3″
Height over all	5′ 3″
Height to top of hopper	4′ 0″
Height to center of machine	2′ 4″



Augers and Liners

American No. 233 Auger Machine



THIS machine is designed for the manufacture of building bricks, fire bricks and street paving blocks; also drain tile, hollow building blocks and fire proofing. Not recommended for drain tile larger than 12″ diameter or hollow blocks larger than 6″ by 12″.

RATED CAPACITY PER HOUR

Building Brick, 4,000 to 7,500 per hour.
Hollow Blocks, 7 to 10 tons per hour.

The capacity is governed by speed at which the pulley is driven, nature and character of clay, size and kind of ware manufactured and by management.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearings and forming an oil reservoir for the gears, also forming the lower half of the clay cylinder.

Shafts

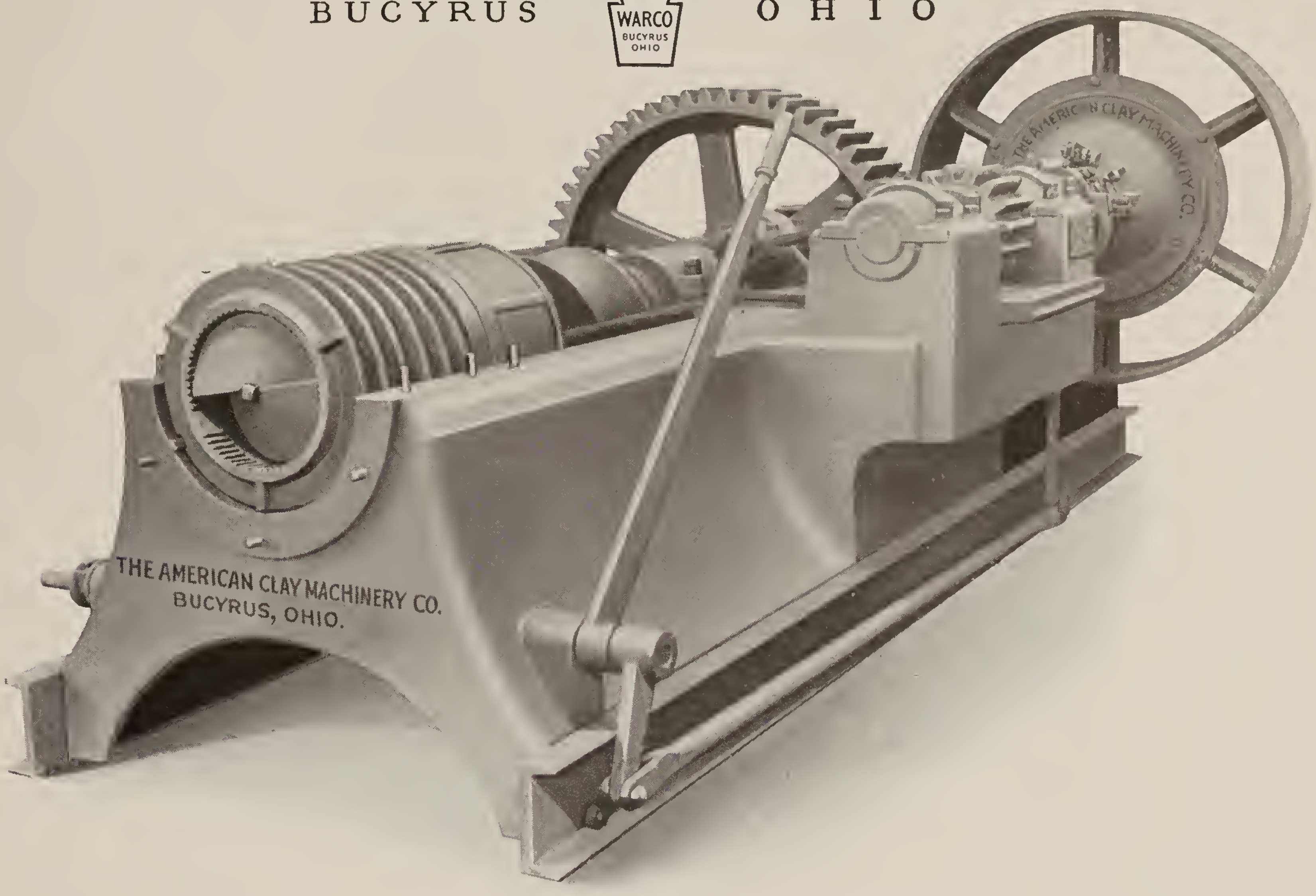
The auger shaft is forged steel turned to 4¾″ diameter; the driving shaft is 3½″ diameter and the shaft of the hopper feeder is 2¼″ diameter.

Bearings

The machine is fitted with ring oiling babbitted bearings. Bearings on the auger shaft are 11½″ and 12″ long. On the driving shaft they are 12″ long and on the hopper feeder shaft they are 8″ long. The independent self-aligning, self-oiling end thrust bearing is 10″ diameter.

Gears

The gears are cut steel, master gear 8″ face


THE AMERICAN CLAY MACHINERY CO.
BUCYRUS, OHIO.
THE AMERIC N CLAY MACHINERY CO.

Internal Mechanism No. 233 Auger Machine

and has 75 teeth, driving pinion has 19 teeth, ratio 4 to 1. They are encased and run in a bath of oil. Gears for the hopper feeder are 3″ face, and have 30 teeth.

Augers

The machine is fitted with a continuous auger having a chilled wearing surface. The standard expressing auger is 10″ diameter. Machine may be fitted with an expressing auger 8″ diameter for small work, or a 12″ expressing auger for large work. The augers are inserted or removed from the front of the machine.

Liners

The clay cylinder of this machine is fitted with sectional removable liners throughout its entire length. Tapering sectional liners are used around the expressing auger, making it possible to insert new section to compensate for the wear on the auger and keep it tightly encased to secure the greatest efficiency. All liners are inserted or removed from the front of the machine.

Hopper Feeder

The hopper feeder is 8″ diameter fitted with reversible spring steel blades. The hub is split so that the feeder can be removed through the hopper of the machine.

Driving Pulley

The machine is furnished with a Bucyrus Disc-Type friction clutch driving pulley 42″ diameter, 12″ face.

Speed

Speed of driving pulley 100 R.P.M. to 200 R.P.M., according to capacity desired and character of work.

Power

Power required to operate this machine will vary from 35 H.P. to 50 H.P., according to capacity, kind of ware manufactured and character of material used.

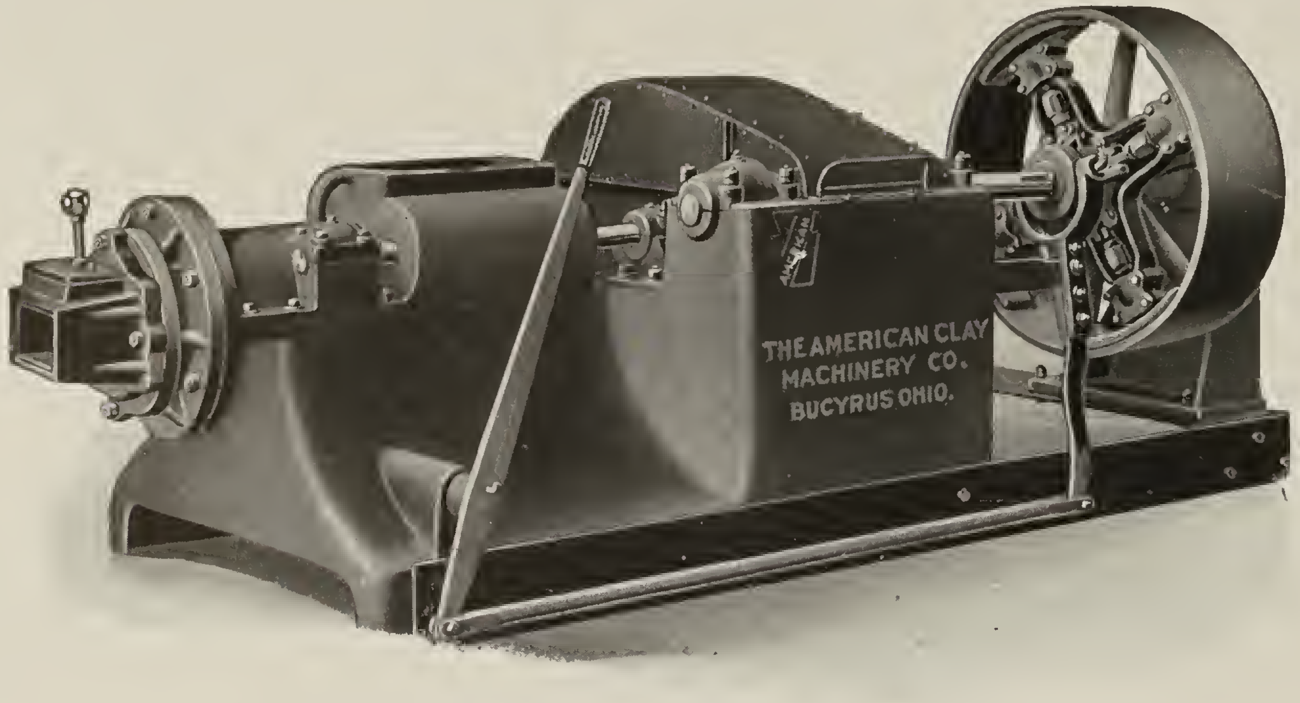
Weight

10,275 pounds without dies.

DIMENSIONS

Length over all	12′	4″
Length of sills	11′	9″
Length from center of hopper to die	3′	7¼″
Length from center of hopper to center of driving pulley	6′	11¼″
Width over all	5′	9¾″
Width of sills	3′	8″
Height over all	4′	7½″
Height to top of hopper	3′	4″
Height to center of machine	2′	4″

American No. 281 Auger Machine



American No. 281 Auger Machine With Brick Die

This machine is designed for the manufacture of building brick and drain tile, also hollow building blocks 4″ by 5″ and 5″ by 8″.

Not recommended for drain tile larger than 8″ diameter.

RATED CAPACITY PER HOUR

Building Brick, 2,000 to 4,000 per hour.

Drain Tile 4″ diameter, 1,000 to 1,500 per hour.

Drain Tile 6″ diameter, 700 to 1,000 per hour.

Drain Tile 8″ diameter, 500 to 700 per hour.

Hollow Building Blocks, 5 to 7 tons per hour.

The capacity is governed by speed at which the pulley is driven, nature and character of clay, size and kind of ware manufactured, and by management.

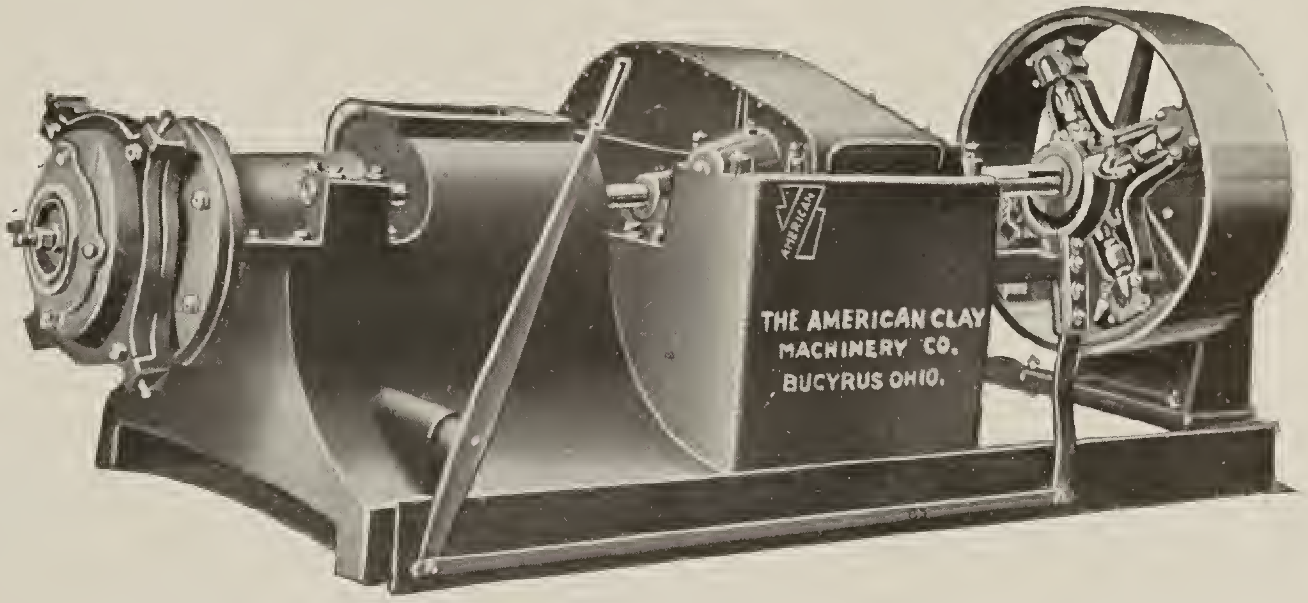
SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearings and forming an oil reservoir for the gears, also forming the lower half of the clay cylinder.

Shafts

The auger shaft is forged steel turned to 3½″ diameter; the driving shaft is 2¾″ diameter and the shaft of the hopper feeder is 2″ diameter.



American No. 281 Auger Machine Showing Method of Attaching Drain Tile Dies

Bearings

The machine is fitted with ring oiling babbitted bearings. Bearings on the auger shaft are 10½″ long. On the driving shaft they are 10½″ long and on the hopper feeder shaft they are 7½″ long. The independent self-aligning, self-oiling end thrust bearing is 8″ diameter.

Gears

The gears are cast iron American gear metal 1¾″ pitch, 5½″ face, master gear 32½″ diameter, driving pinion 8½″ diameter, ratio 4 to 1. They are encased and run in a bath of oil. Gears for the hopper feeder are 1″ pitch, 2″ face, 8¼″ diameter.

Augers

The machine is fitted with a continuous auger having a chilled wearing surface. The standard expressing auger is 8″ diameter. Machine may be fitted with an expressing auger 6″ diameter for small work, or a 10″ expressing auger for large work. The augers are inserted or removed from the front of the machine.

Liners

Removable tapering sectional liners are used around the expressing auger, making it possible to insert new sections to compensate for the wear on the auger and keep it tightly encased to secure the greatest efficiency.

Hopper Feeder

The hopper feeder is 6½″ diameter, fitted with reversible spring steel blades. The hub is split so that the feeder can be removed through the hopper of the machine.

Driving Pulley

Machine is furnished with a Bucyrus Disc-Type friction clutch driving pulley 36″ diameter, 12″ face.

Speed

Speed of driving pulley 100 R.P.M. to 200 R.P.M., according to capacity desired and character of work.

Power

Power required to operate this machine will vary from 20 H.P. to 40 H.P., according to capacity, kind of ware manufactured and character of material used.

Weight

7,225 pounds, without dies.

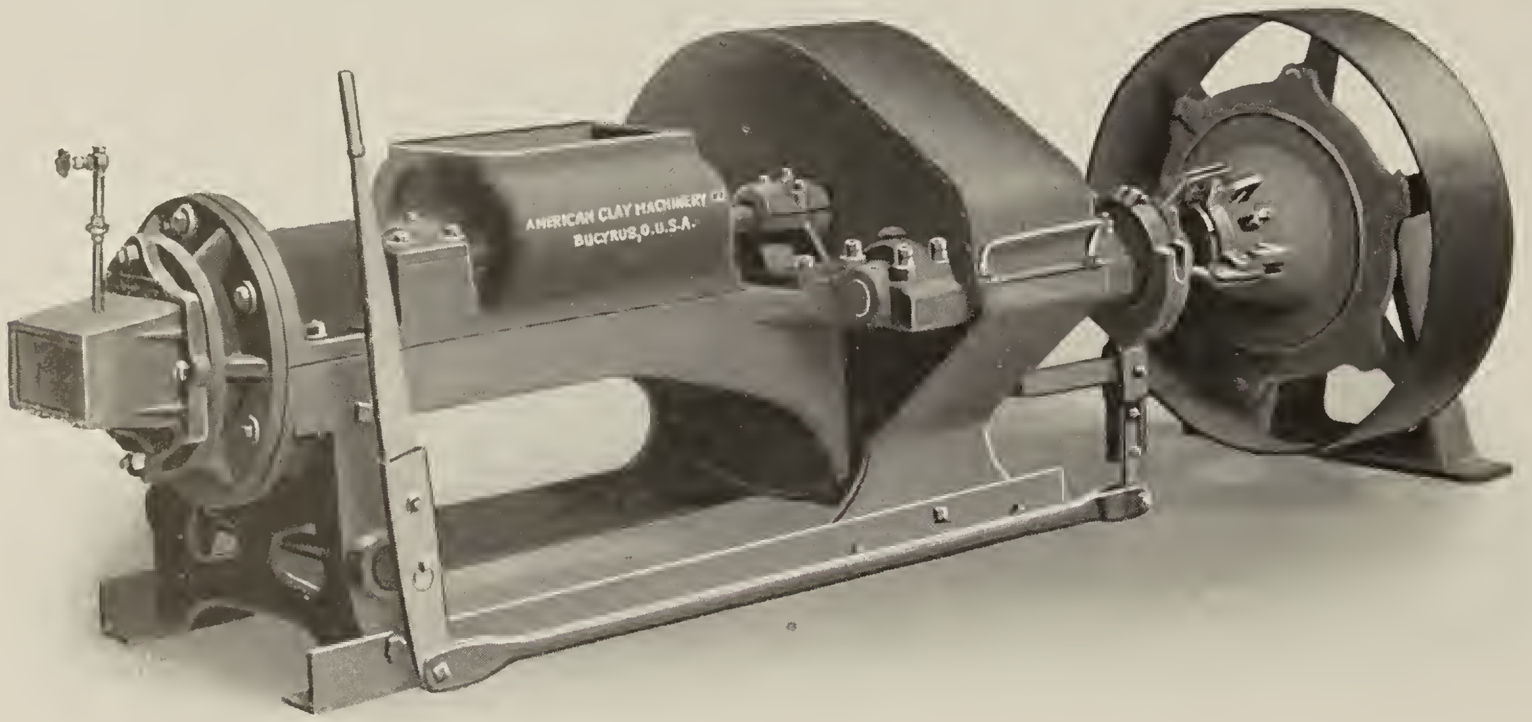
DIMENSIONS

Length over all	11′	¼″
Length of sills	9′	7″
Length from center of hopper to die	3′	1¼″
Length from center of hopper to center of driving pulley	5′	10½″
Width over all	5′	0″
Width over sills	4′	1″
Height over all	4′	2″
Height to top of hopper	2′	11½″
Height to center of machine	2′	0″

American Standard No. 328 Auger Machine

THIS machine is designed for the manufacture of building brick and drain tile, also hollow building blocks 4″ by 5″ and 5″ by 8″.

Not recommended for drain tile larger than 8″ diameter.



RATED CAPACITY PER HOUR

Building brick, 2,000 to 3,000 per hour.
Drain Tile 4″ diameter, 1,000 to 1,500 per hour.
Drain tile 6″ diameter, 700 to 1,000 per hour.
Drain Tile 8″ diameter, 500 to 700 per hour.
Hollow Building Blocks, 3 to 5 tons per hour.

The capacity is governed by speed at which the pulley is driven, nature and character of clay, size and kind of ware manufactured, and by management.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearings and forming an oil reservoir for the gears, also forming the lower half of the clay cylinder.

Shafts

The auger shaft is forged steel turned to 3½″ diameter; the driving shaft is 2½″ diameter and the shaft of the hopper feeder is 2″ diameter.

Bearings

The machine is fitted with ring oiling babbitted bearings. Bearings on the auger shaft are 9½″ and 6¾″ long. On the driving shaft they are 7½″ long and on the hopper feeder shaft they are 7½″ long. The self-oiling end thrust bearing is 5¾″ diameter.

Gears

The gears are cast American gear metal 1¾″ pitch, 4½″ face, master gear 30⅜″ diameter, driving pinion 6⅝″ diameter, ratio 4½″ to 1. They are encased and run in a bath of oil. Gears for the hopper feeder are 1″ pitch, 2″ face, 8¼″ diameter.

Augers

The machine is fitted with a continuous auger having a chilled wearing surface. The standard expressing auger is 8″ diameter. Machine may be fitted with an expressing auger 6″ diameter for small work, or a 10″ expressing auger for large work. The augers are inserted or removed from the front of the machine.

Liners

Removable tapering sectional liners are used around the expressing auger, making it possible to insert new sections to compensate for the wear on the auger and keep it tightly encased to secure the greatest efficiency.

Hopper Feeder

The hopper feeder is 6½″ diameter, fitted with reversible spring steel blades. The hub is split so that the feeder can be removed through the hopper of the machine.

Driving Pulley

Machine is furnished with a Bucyrus Disc-Type friction clutch driving pulley 36″ diameter, 10″ face.

Speed

Speed of driving pulley 100 R.P.M. to 200 R.P.M., according to capacity desired and character of work.

Power

Power required to operate this machine will vary from 15 H.P. to 30 H.P., according to capacity, kind of ware manufactured and character of material used.

Weight

4,270 pounds, without dies.

DIMENSIONS

Length over all	10′ ¼″
Length of sills	6′ 0″
Length from center of hopper to die	3′ 4″
Length from center of hopper to center of driving pulley	6′ 8½″
Width over all	4′ 7⅝″
Width over sills	2′ 3″
Height over all	3′ 2⅝″
Height to top of hopper	2′ 8½″
Height to center of machine	1′ 9″

BRICK FOR THE PICTURESQUE FIREPLACE
No material is more adaptable than brick for the building of unusual and beautiful fireplaces. The opportunity for individual treatment is the broadest possible.

Combined Auger Machines and Pug Mills

THIS Company has been engaged in the manufacture of clay-working machinery for many years and have always employed the most skilled engineers to bring the complete line up to a high standard of excellence. They have spared neither time nor expense in order to study the performance of various machines in different clays and under commercial conditions.

In considering combined machines in which the tempering of the material and extruding it through a die is done in one machine it was no unusual occurrence to see that the user had found it advisable to install an additional pug mill ahead or over the "combined machine" in order to obtain a satisfactory product.

From the number of cases in which the use of an additional pug mill would improve the quality of the ware, it was evident that the pugging section of the combined machine was not adequate for the purpose intended.

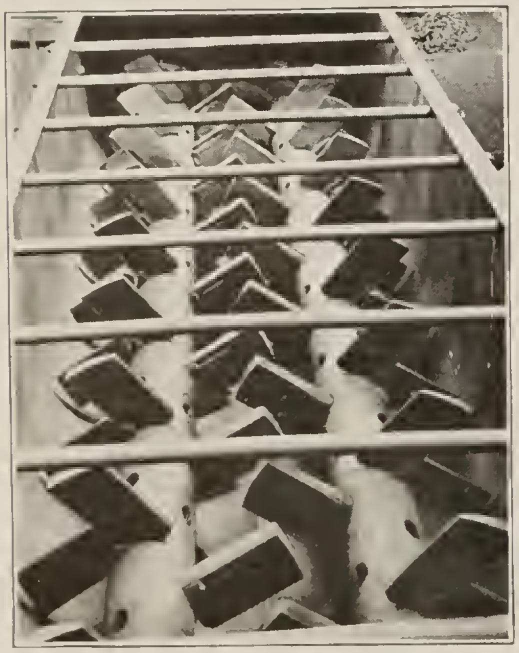
On taking power readings in clays that were not of the "free flowing" kind there was an excessive amount of power consumed; some of it wasted in transferring the clay from the pugging section to the auger. Many of the various parts of the machines were almost inaccessible and wear and tear was rather excessive.

To overcome the forementioned difficulties has required much study and experimentation.

A study of mixing or tempering was then taken up, including both the single- and double-shaft pug mills.

A single-shaft pug mill long enough to do proper work with clays that did not absorb water very quickly required a long shaft and the bearings were too far apart, resulting in crystallizing and breakage of shafts.

The double-shaft pug mill as first made did a little better work and could be made shorter and finally by making a double shaft pug mill with the knives from each shaft overlapping the knives from the opposite shaft, as much as possible, it was found that excellent work was done with a minimum of power consumed.


Overlapping Pug Mill Knives

At the same time, in connection with our regular line of auger machines the auger or screw was being improved and raised to a greater efficiency so that it only remained to combine the double-shaft pug mill with the most efficient auger machine in a simple manner with proper proportions of pugging area to the extrusion capacity of the auger and we have a most efficient machine.

The auger, as previously stated, has been developed and improved in shape to a point where production is obtained with a minimum amount of power and the metal used in making them has been improved until they are quite durable.

Bearings were given consideration last of all for the reason that we were already using plain bearings of sufficient area to carry the load imposed on them with freedom from trouble and because the friction load on the bearings is only approximately 10 per cent of the work load. We preferred to eliminate the greater losses first.

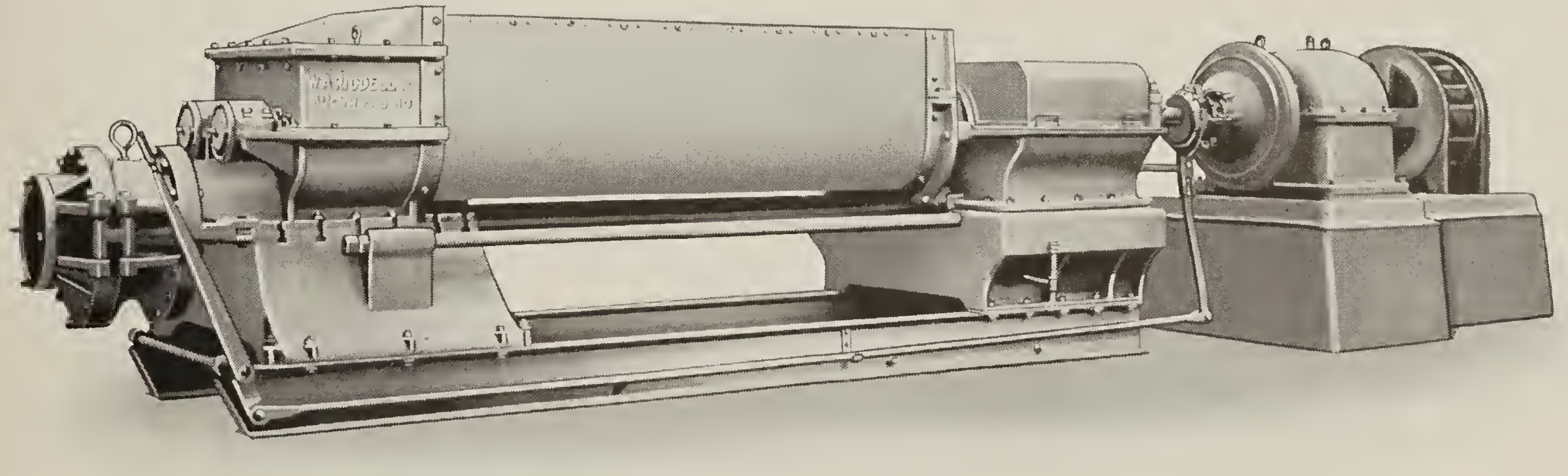
It is possible to save power by the use of roller bearings in machinery having inadequate or underlubricated bearings, also it is possible to save a certain per cent of the total amount of power consumed by a brick machine by the use of roller bearings, of the correct size properly mounted.

Roller bearings, like clay-working machinery, have been developed to a wonderful state of perfection, and having worked out greater difficulties we are proceeding with additional refinements, including roller bearings, and will incorporate them in our designs as rapidly as conditions permit, consistent with safe engineering practice.

Combined machines, when properly designed and built, are an improvement over separate machines. They do not consume any more power. The pug mill will exert a slight pressure on the auger, causing it to function more efficiently. Under proper conditions they remove most of the occluded air from the clay, improving the structure of the ware. They occupy less space vertically, do not choke up in the hopper, require less attention than separate machines, and one drive belt is sufficient.

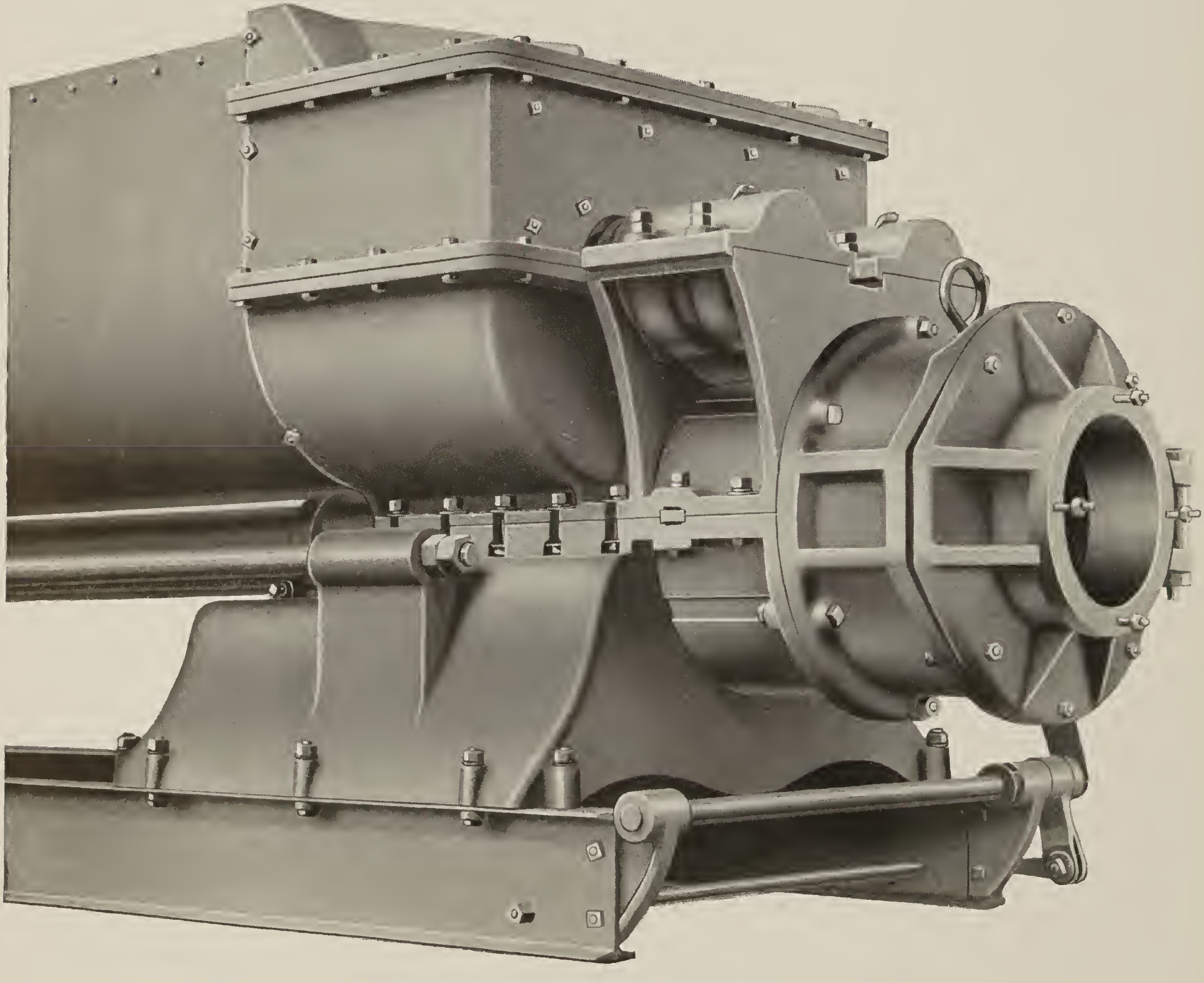
American Combined Machines do not require an additional pug mill.

They operate with minimum amount of power. They are of modern construction. They are built to produce all standard sizes of ware and of a capacity for any quantity production.



American No. 801 Combined Auger Machine and 12-Foot Double-Shaft Pug Mill. Motor Drive

American No. 450 Combined Auger Machine and 12-Foot Double Shaft Pug Mill



Front End of No. 450 Combined Machine

American No. 450 Combined Auger Machine

DESCRIPTION AND SPECIFICATIONS

THIS machine is designed for the manufacture of fire proofing conduits and brick in large quantities and may be equipped with suitable expressing augers for the manufacture of blocks and other refractories in large cross section.

Rated Capacity Per Hour

Building brick, 7,500 to 15,000.
Paving brick, 6,000 to 12,000.
Fire proofing, 15 to 30 tons.

The capacity is governed by speed at which pulley is driven, nature and character of clay used, size and kind of ware manufactured and by management.

Machine is well and substantially built in every detail and will give long and satisfactory service. The double shaft pug mill insures thorough tempering and ample pugging capacity for the auger. The knives in the Pug Mill overlap each other and those from one pug shaft overlap the rear augers of the expressing section, making a very efficient method of transferring the prepared material to the expressing auger.

SPECIFICATIONS

Base

There are two bases, one at the gear end and another at the discharge end. Both are heavy one-piece castings with long bearing surfaces on the I-beam skids to which they are securely bolted. The Gear Base carries the bearings for the auger shaft and the frame for supporting the pug mill shafts as well as the "floating" end thrust bearing. It is closed at the bottom and forms a reservoir for oiling the gears. The top surface is machined to receive the upper frame which carries the pug mill shafts and the driving shaft.

The upper frame is machined on the bottom and is bolted to the main frame. It is covered with a sheet steel dust-proof housing to protect the gears.

Clay Cylinder

The base at the discharge end forms the lower half of the Clay Cylinder and supports the forward bearing of the auger shaft. The upper half of the Clay Cylinder carries the forward bearings of the pug mill shafts. All joints are machined and the nozzle is bolted to the Clay Cylinder.

Shaft

The Auger Shaft is forged steel 7½ inches in diameter. The steel driving shaft is 5-inch diameter. The Pug Mill shafts are steel 8-inch diameter.

Bearings

Machine is designed with a space between all bearings and the clay compartment so that it is impossible for clay to work into the bearings. The forward bearing of the auger shaft which is under the pug mill, is 21 inches long. This bearing is split and is bored and bushed with a bronze bushing to facilitate renewals. Oil is supplied by means of a chain running over the shaft and down into a reservoir cast in the base. Both rear bearings on the auger shaft are ring oiling, 20 inches long. The "Floating" type and thrust bearing for the rear end of the auger shaft is attached to the main frame by two heavy steel bolts. This bearing is self-aligning and self-oiling; the discs in this bearing are 16-inch diameter and run in a bath of oil.

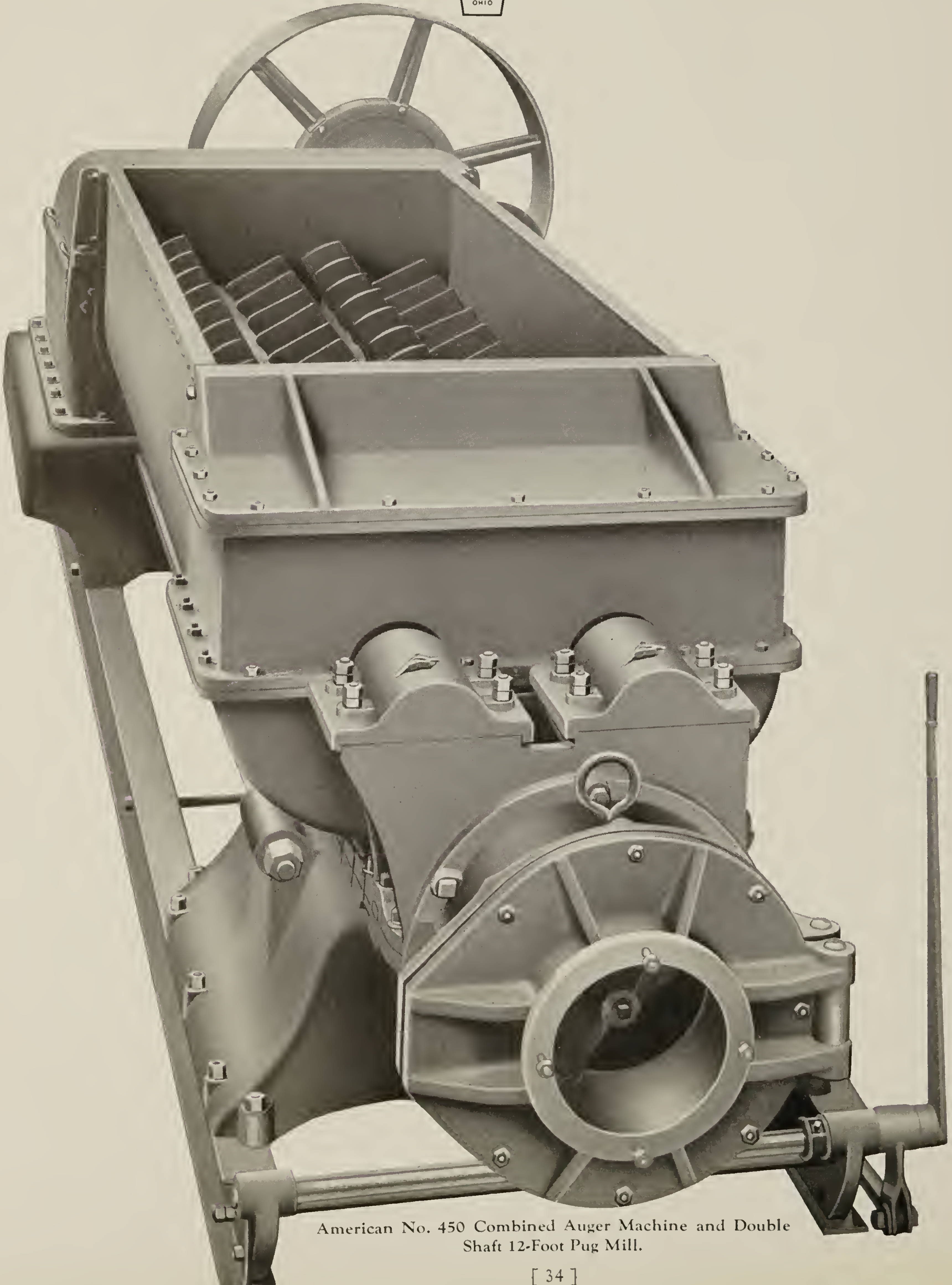
The Pug Mill shafts have "marine type" end-thrust bearings 18 inches long and ring oiling bearings on the forward end 14 inches long.

The Driving Shaft bearings are ring oiling 17 inches long. All bearings not readily accessible for oiling, and have oil pipes at convenient points.

Gears

All gears are made of steel and run in oil under a dust-proof cover. The teeth are cut and are of the stub tooth design, such as are used on heavy rolling mill machinery. Teeth of this design possess the advantage of greater strength and longer wear.

The driving pinion has 16 teeth and the master gear 98 teeth and 12-inch face, while the pug mill gears have 33 teeth and 10-inch face.



American No. 450 Combined Auger Machine and Double Shaft 12-Foot Pug Mill.

Augers

The machine is fitted with a continuous auger 20 inches in diameter with a standard expressing auger 16 inches in diameter. A smaller or larger expressing auger may be substituted for special service; the maximum diameter auger that will go in is 27½ inches in diameter.

All augers are inserted or removed from the front of the machine.

Liners

The Clay Cylinder is fitted with renewable liners which protect the main casting from wear, and are readily inserted or removed from the front of the machine. The discharge end of the pug mill is also lined. The nozzle is fitted with sectional liners which permits the use of different size expressing augers for different sizes of ware.

Shell

The Pug Mill Shell is made of tank steel $\frac{5}{16}$″ thick. The tempering chamber is 12′ long, 54″ wide and 39″ deep.

Knives

The Pug Knives are steel heat treated and hardened by a special process. They have round shanks and are inserted in the Pug Shafts and secured with forged keys. This permits setting the knives at any angle required for thorough tempering. The blades are 10″ long and 6″ wide, 104 knives required for the double shaft pug mill.

Driving Pulley

This machine is furnished with a Bucyrus Disc-type Friction clutch pulley 72″ in diameter and 20″ face.

Speed

Speed of driving pulley 125 to 225 R. P. M. according to capacity desired and character of work.

Power

Power required to operate this machine will vary from 100 to 175 H. P., according to capacity, kind of ware manufactured and character of material used.

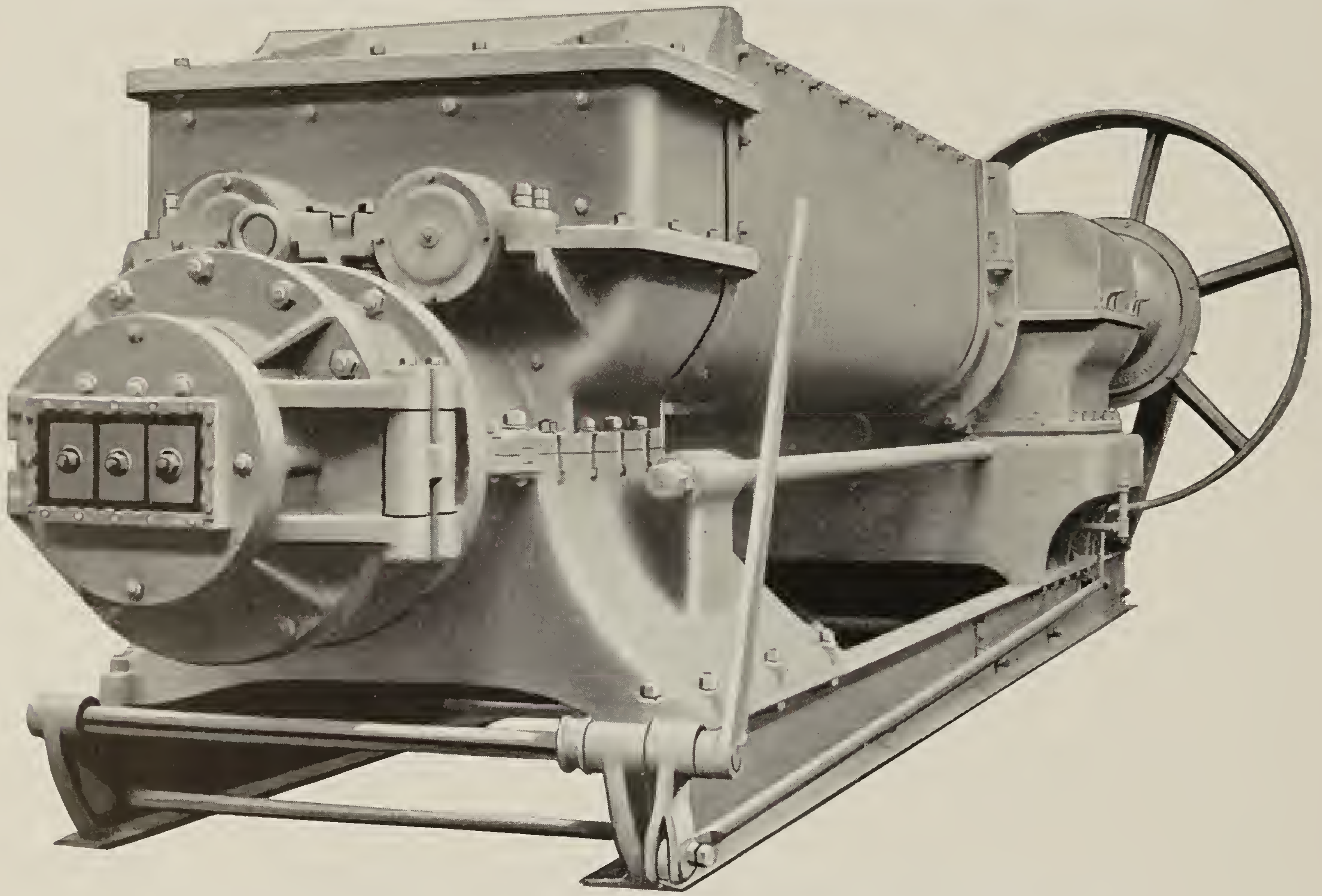
Weight

57,665 pounds without dies.

DIMENSIONS

Length over all	31′	0″
Length over sills	28′	0″
Length from center of pulley to receiving end of shell	10′	3¼″
Length from receiving end of shell to back of die	17′	7″
Width over all	9′	2½″
Width over sills	5′	5″
Width center of auger to center of driving shaft	2′	7¾″
Height over all	7′	9″
Height to top of shell	6′	8″
Height to center of auger	3′	0″

American No. 801 Combined Auger Machine and Pug Mill



American No. 801 Combined Auger Machine and 12-Foot Double Shaft Pug Mill, Belt Drive

THIS machine was designed to cover a wide field of usefulness and a great range in production. It is designed so that the expressing auger may be of any size required for the kind of ware to be made within the following limitations:

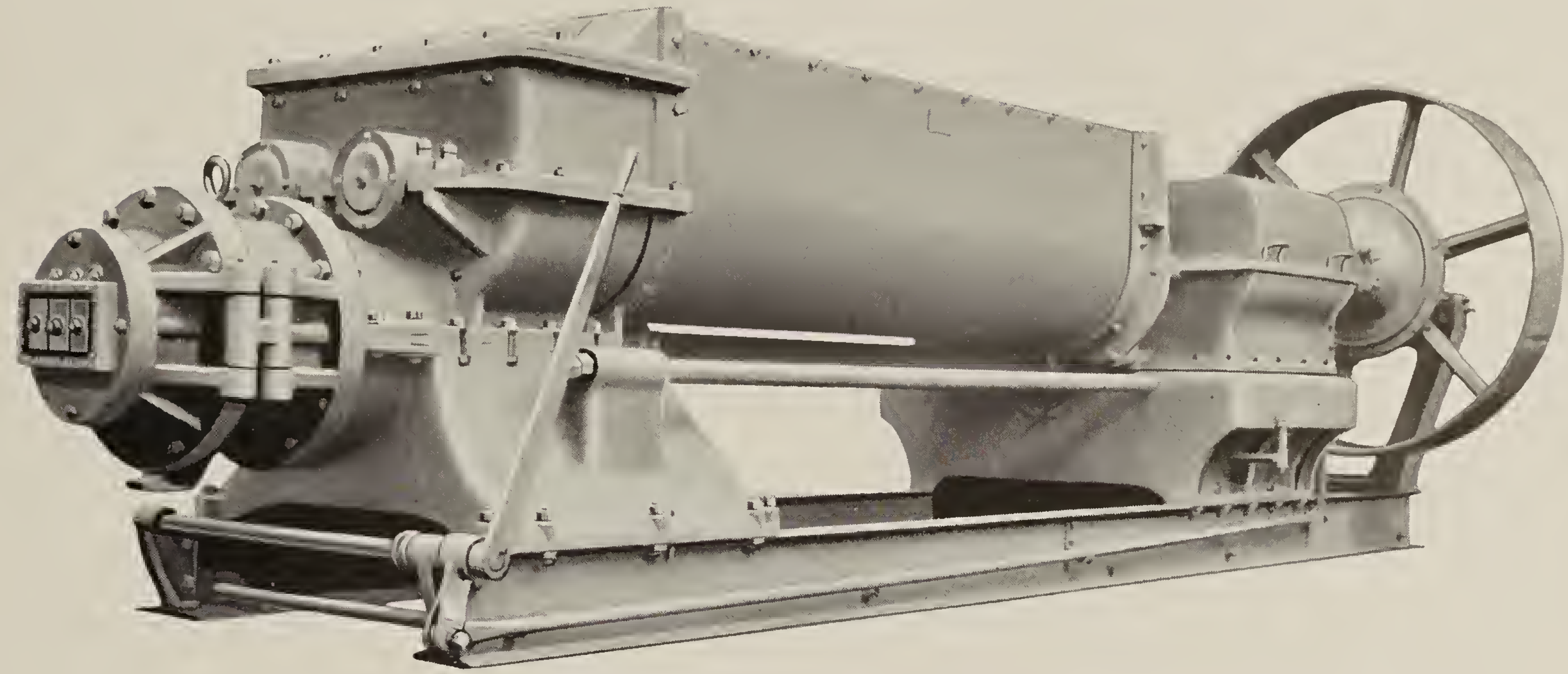
Minimum diameter expressing auger 12″; maximum diameter expressing auger 18″, measured at the point or die end. This makes it possible to supply an expressing auger having a suitable area for the die used and to, as far as possible, give uniform pressure at the inlet of the die for all ordinary sizes of ware.

RATED CAPACITY PER HOUR

Building Brick, 10 to 15 M. per hour.
Hollow Ware, 20 to 30 tons per hour.

The capacity is governed by speed at which pulley is driven, nature and character of clay used, size and kind of ware manufactured and by management.

This machine is well and substantially built in every detail, and will give long and satisfactory service. The double-shaft pug mill insures ample pugging capacity for the auger, and the material is well and thoroughly tempered. The "Battle Ax" knives in the pug mill overlap each other and those from one pug shaft overlap the rear augers of the expressing section, making a very efficient method of transferring the prepared material to the expressing auger.



American No. 801 Combined Auger Machine and 12-Foot Double-Shaft Pug Mill. Belt Drive

SPECIFICATIONS

Base

There are two bases, one at the gear end and another at the discharge end. Both are heavy one-piece castings with long bearing surfaces on the I-beam sills to which they are securely bolted. The gear base carries the bearings for the auger shaft and the frame for supporting the pug mill shafts as well as the end thrust bearing. It is closed at the bottom and forms a reservoir for oiling the gears. The top surface is machined to receive the upper frame which carries the pugging and driving shafts.

The bearings are all bored to receive the cartridge containing the roller bearings.

The upper frame is machined on the bottom for bolting to the main frame; the bearings are bored to receive the cartridges containing the roller bearings, and is covered with a sheet steel housing for excluding dust.

Clay Cylinder

The base at the discharge end forms the lower half of the clay cylinder and supports the forward bearing of the auger shaft. The upper half of the clay cylinder carries the forward bearings of the pug mill shafts. All joints are machined and the cylinder is bored to receive the liners.

Shafts

The auger shaft is forged steel $6\frac{1}{8}''$ in diameter. The steel driving shaft is 4″ and 5″ in diameter. The pug mill shafts are steel, 7″ diameter.

Bearings

There is a space between each bearing and the clay compartment so that it is impossible for clay to reach them. The end thrust bearing and radial bearings on auger shaft at the gear end, the thrust and radial bearings on pugging shafts at gear end, are Timken roller bearings of the latest type and amply large for the bearing loads.

The radial bearing of auger shaft under pug mill, radial bearings on front end of pugging shafts, and radial bearings on driving shaft except outboard bearing are Hyatt roller bearings, amply large for their load. Outboard bearing of driving shaft is Timken roller bearing, ball and socket mounted and adjustable.

All Timken roller bearings are mounted in steel cartridges for the purpose of having a durable mounting and for convenience in assembling and renewal.

Gears

All gears are cut steel. The master gear is 8″ face and has 105 teeth. The driving pinion has 18 teeth. The pug mill gears are 8″ face and have 34 teeth. All gears run in oil under a dust-proof housing or cover.

Augers

The machine is fitted with a continuous auger, having a chilled wearing surface. The rear augers are 18″ diameter. The standard expressing auger is 14″ diameter. Machine may be fitted with either 12″ diameter or 16″ or 18″ diameter expressing augers when desired. All augers are inserted or removed from the front of the machine.

Liners

The clay cylinder is fitted with renewable liners which protect the main casting from wear and are readily inserted or removed from the front of the machine. The discharge end of the pug mill is also lined. The nozzle is fitted with sectional liners which permits the use of different size-expressing augers for different sizes of ware.

Shell

The pug mill shell is made of tank steel ¼″ thick. The tempering chamber is 12 ft. long, 47″ wide and 36″ deep. It is covered with a grid made of ¾″ pipe 12″ apart as a safety guard to protect life and limb.

Knives

The pug knives are high carbon steel hardened at the wearing point of the blade. They have round shanks and are inserted in the pug shaft and secured with forged keys. This permits setting the knives at any angle required for thorough tempering. The blades are 9¼″ long and 4½″ wide, 82 knives are required for the double-shaft pug mill.

Driving Pulley

This machine is furnished with a Bucyrus Disc-Type friction clutch pulley 72″ diameter and 16″ face.

Speed

Speed of driving pulley 100 to 200 R.P.M., according to capacity desired and character of work.

Power

Power required to operate this machine will vary from 75 to 100 H.P., according to capacity, kind of ware manufactured and character of material used.

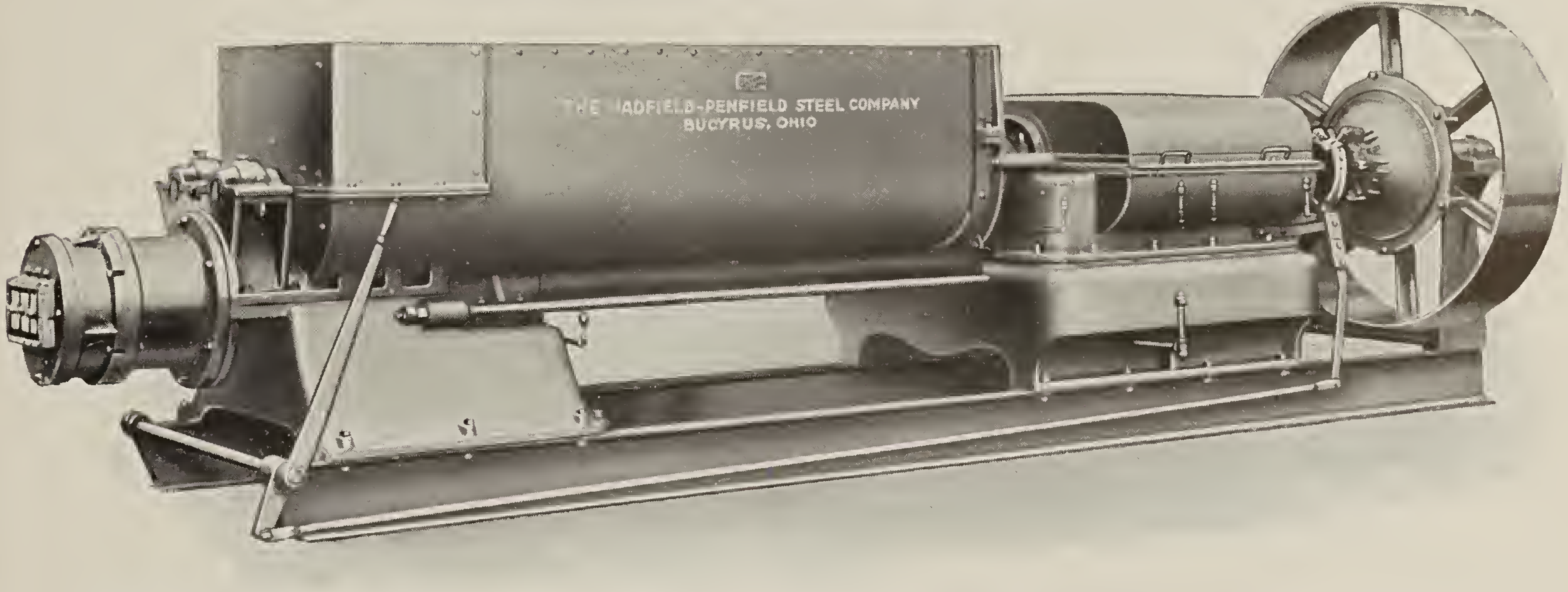
Weight

32,700 pounds.

DIMENSIONS

Length over all	24′	1½″
Length over sills	21′	10″
Length from center of pulley to receiving end of shell	6′	10⅝″
Length from receiving end of shell to die	15′	3″
Width over all	8′	6″
Width over sills	5′	0″
Width center of auger to center of driving shaft	2′	4″
Height over all	7′	8″
Height to top of shell	6′	3″
Height to center of auger	2′	11″

American No. 404 Combined Auger Machine and Double Shaft Ten Foot Pug Mill



THIS machine is designed for the manufacture of building brick, fire brick and street paving brick; also hollow building blocks and drain tile.

Rated Capacity Per Hour
Building Brick, 5,000 to 10,000.
Hollow Ware, 12 to 20 Tons.

The capacity is governed by speed at which pulley is driven, nature and character of clay used, size and kind of ware manufactured and by management. Machine is well and substantially built in every detail, and will give long and satisfactory service. The double shaft pug mill insures ample plugging capacity for the auger, and the material is well and thoroughly tempered. The "Battle Ax" Knives in the Pug Mill overlap each other and those from one pug shaft overlap the rear augers of the expressing section, making a very efficient method of transferring the prepared material to the expressing auger.

SPECIFICATIONS

Base

There are two bases, one at the gear end and another at the discharge end. Both are heavy one-piece castings with long bearing surfaces on the I-beam skids to which they are securely bolted. The Gear Base carries the bearings for the auger shaft and the frame for supporting the pug mill shafts as well as the "floating" end thrust bearing. It is closed at the bottom and forms a reservoir for oiling the gears. The top surface is machined to receive the upper frame which carries the pug mill shafts and the driving shaft.

The upper frame is machined on the bottom and is bolted to the main frame. It is covered with a sheet steel dust-proof housing to protect the gears.

Clay Cylinder

The base at the discharge end forms the lower half of the Clay Cylinder and supports the forward bearing of the auger shaft. The upper half of the Clay Cylinder carries the forward bearing of the pug mill shafts. All joints are machined and the nozzle is bolted to the Clay Cylinder.

Shafts

The Auger Shaft is forged steel 5″ in diameter. The steel driving shaft is 4″ diameter. The pug mill shafts are steel 6¼″ diameter.

Bearings

Machine is designed with a space between all bearings and the clay compartment so that it is impossible for clay to work into the bearings.

The forward bearing of the auger shaft which is under the pug mill, is 16″ long. This bearing is split and is bored and bushed with a bronze bushing to facilitate renewals. Oil is supplied by means of a chain running over the shaft and down into a reservoir cast in the base. Both rear bearings on the auger shaft are ring oiling, 16″ long. The "floating" type end thrust bearing for the rear end of the auger shaft is attached to the main frame by two heavy steel bolts. This bearing is self-aligning and self-oiling; the discs in this bearing are 10″ diameter and run in a bath of oil. The Pug Mill shafts have "marine type" end-thrust bearings 14″ long and ring oiling bearings on the forward end 8½″ long.

The Driving Shaft bearings are ring oiling 13″ long. All bearings not readily accessible for oiling, have oil pipes at convenient points.

Gears

All gears are cut steel. The master gear is 9½″ face and has 90 teeth. The driving pinion has 15 teeth. The pug mill gears are 9″ face and have 20 teeth. All gears run in oil under a dust-proof housing or cover.

Augers

The machine is fitted with a continuous Auger, having a chilled wearing surface. The rear augers are 14″ diameter. The standard expressing auger is 12″ diameter. Machine may be fitted with either 10″ diameter or 14″ diameter expressing augers if so desired. All augers are inserted or removed from the front of the machine.

Liners

The Clay Cylinder is fitted with renewable liners which protect the main casting from wear, and are readily inserted or removed from the front of the machine. The discharge end of the pug mill is also lined. The nozzle is fitted with sectional liners which permits the use of different size expressing augers for different sizes of ware.

Shell

The Pug Mill Shell is made of tank steel ¼″ thick. The tempering chamber is 10′ long, 40″ wide and 33″ deep.

Knives

The Pug Knives are cast steel "Battle Ax" type. They have round shanks and are inserted in the Pug Shaft and secured with forged keys. This permits setting the knives at any angle required for thorough tempering. The blades are 8″ long and 4½″ wide, 72 knives are required for the double shaft pug mill.

Driving Pulley

This machine is furnished with a Bucyrus Disc-Type friction clutch pulley 60″ diameter and 16″ face.

Speed

Speed of driving pulley 150 to 200 R. P. M. according to capacity desired and character of work.

Power

Power required to operate this machine will vary from 75 to 100 H. P., according to capacity, kind of ware manufactured and character of material used.

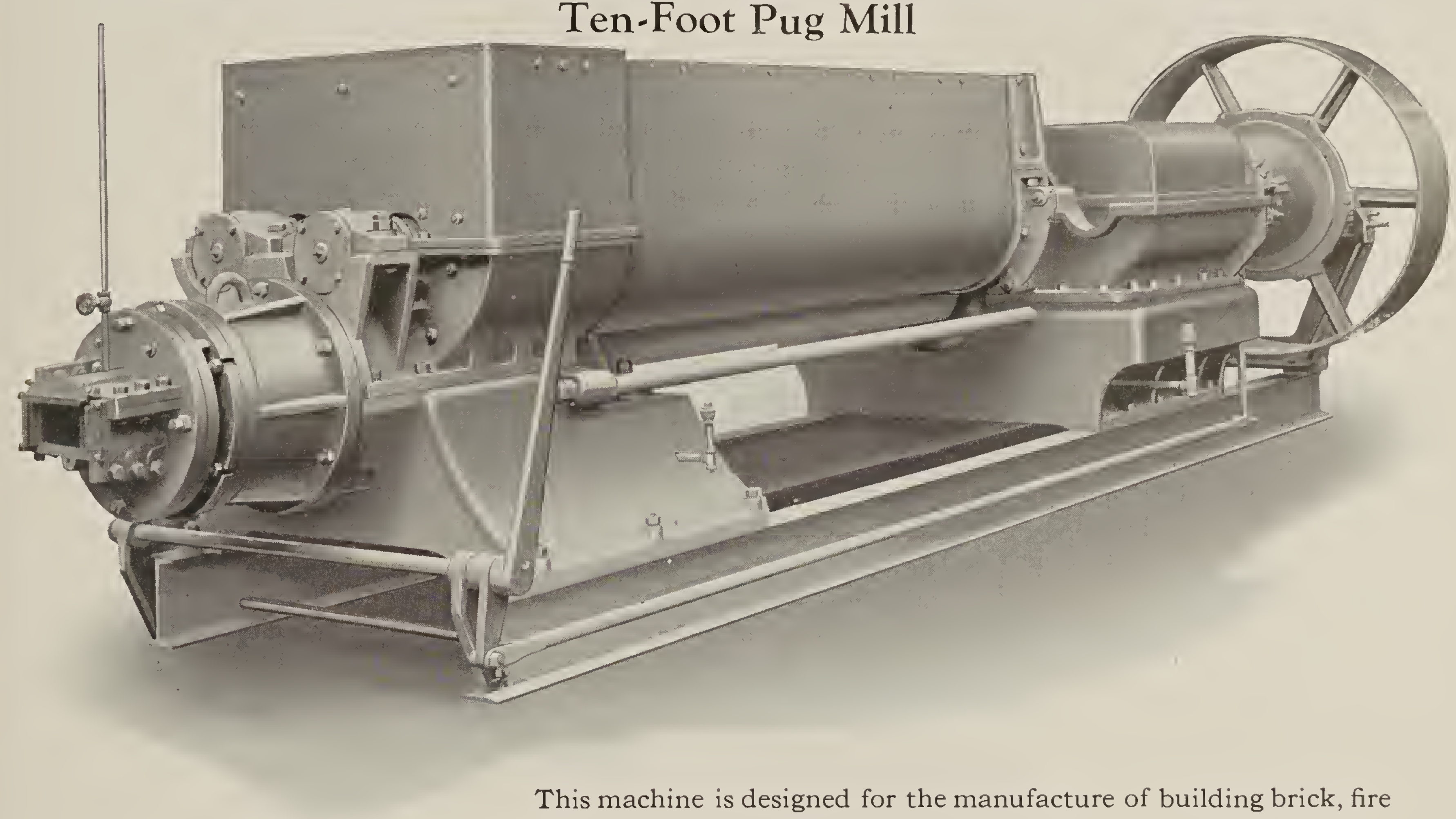
Weight

26,500 pounds without dies.

DIMENSIONS

Length over all	22′ 3″
Length over sills	20′ 6″
Length from center of pulley to receiving end of shell	7′ 10″
Length from receiving end of shell to die	12′ 4″
Width over all	7′ 7″
Width over sills	4′ 6″
Width center of auger to center of driving shaft	2′ 2″
Height over all	6′ 3″
Height to top of shell	5′ 6″
Height to center of auger	2′ 6″

American No. 404-A Combined Auger Machine and Double-Shaft Ten-Foot Pug Mill



This machine is designed for the manufacture of building brick, fire brick, street paving brick; also hollow building blocks and drain tile.

RATED CAPACITY PER HOUR

Building Brick, 5,000 to 10,000.
Hollow Ware, 12 to 20 tons.

The capacity is governed by speed at which pulley is driven, nature and character of clay used, size and kind of ware manufactured and by management. Machine is well and substantially built in every detail, and will give long and satisfactory service. The double-shaft pug mill insures ample mixing capacity for the auger, and the material is well and thoroughly tempered. The "Battle Ax" knives in the pug mill overlap each other and those from one pug shaft overlap the rear augers of the expressing section, making a very efficient method of transferring the prepared material to the expressing auger.

SPECIFICATIONS

Base

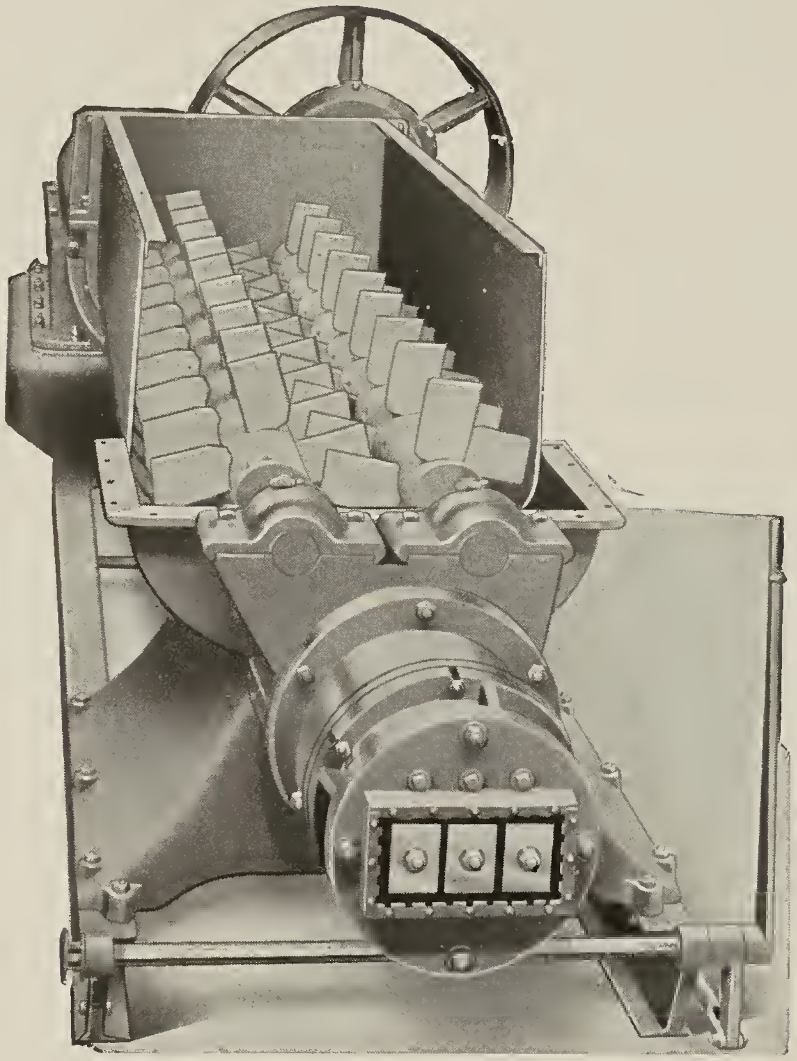
There are two bases, one at the gear end and another at the discharge end. Both are heavy one-piece castings with long bearing surfaces on the I-beam sills to which they are securely bolted. The gear base carries the bearings for the auger shaft and the frame for supporting the pug mill shafts as well as the end thrust bearing. It is closed at the bottom and forms a reservoir for oiling the gears. The top surface is machined to receive the upper frame which carries the pugging and driving shafts.

The bearings are all bored to receive the cartridges containing roller bearings.

The upper frame is machined on the bottom for bolting to the main frame; the bearings are bored to receive the cartridges containing roller bearings and are covered with a sheet steel housing for excluding dust.

Clay Cylinder

The base at the discharge end forms the lower half of the clay cylinder and supports the



American No. 404A Combined Auger Machine
Showing knives *overlapping*

forward bearing of the auger shaft. The upper half of the clay cylinder carries the forward bearings of the pug mill shafts. All joints are machined.

Shafts

The Auger Shaft is forged steel 5″ in diameter. The steel driving shaft is 4″ in diameter. The pug mill shafts are rolled steel 6¼″ diameter.

Bearings

There is a space between each bearing and the clay compartment so that it is impossible for clay to reach them. The end thrust bearing and radial bearings on auger shaft at the gear end and the thrust and radial bearings on pugging shafts at gear end, are Timken roller bearings of the latest type and amply large for the bearing loads.

The radial bearing of auger shaft under pug mill, radial bearings on front end of pugging shafts and radial bearings on driving shaft are Hyatt roller bearings.

All Timken roller bearings are mounted in steel cartridges for the purpose of having a durable mounting and for convenience in fitting.

Gears

All gears are cut steel. The master gear is 9½″ face and has 90 teeth. The driving pinion has 15 teeth. The pug mill gears are 9″ face and have 20 teeth. All gears run in oil under a dust-proof housing or cover.

Augers

The machine is fitted with a continuous auger, having a chilled wearing surface. The rear augers are 14″ diameter. The standard expressing auger is 12″ diameter. Machine may be fitted with either 10″ diameter or 14″ diameter expressing augers if so desired. All augers are inserted or removed from the front of the machine.

Liners

The clay cylinder is fitted with renewable liners which protect the main casting from wear, and are readily inserted or removed from the front of the machine. The discharge end of the pug mill is also lined. The nozzle is fitted with sectional liners which permits the use of different size expressing augers for different sizes of ware.

Shell

The pug mill shell is made of tank steel ¼″ thick. The tempering chamber is 10′ long, 40″ wide and 33″ deep.

Knives

The pug knives are high carbon heat-treated steel, "Battle Ax" type. They have round shanks and are inserted in the pug shaft and secured with forged keys. This permits setting the knives at any angle required for thorough tempering. The blades are 8″ long and 4½″ wide, 72 knives are required for the double-shaft pug mill.

Driving Pulley

This machine is furnished with a Bucyrus Disc-Type friction clutch pulley 60″ diameter and 16″ face.

Speed

Speed of driving pulley 120 to 200 R.P.M., according to capacity desired and character of work.

Power

Power required to operate this machine will vary from 60 to 80 H.P., according to capacity, kind of ware manufactured and character of material used.

Weight

26,500 pounds without dies.

DIMENSIONS

Length over all	21′	11″
Length over sills	19′	6″
Length from center of pulley to receiving end of shell	6′	10½″
Length from receiving end of shell to die	12′	4″
Width over all	7′	7″
Width over sills	4′	6″
Width center of auger to center of driving shaft	2′	2″
Height over all	6′	3″
Height to top of shell	5′	6″
Height to center of auger	2′	6″

LAMINATIONS

BY DAVIS BROWN

THE SUBJECT of laminations and a means for preventing their formation is an interesting and frequently a serious one to those obliged to use a laminating clay and to manufacturers of clay-working machinery.

Having been actively engaged in designing, building and servicing clay-working machinery many years, being up against this problem continuously, I am herewith passing on some of my observations for what they are worth, hoping same may prove of benefit to others.

When you consider that some clays are laminated in their original state in the bank, and that after being ground and properly mixed, the particles composing it rearrange themselves into a laminated structure whenever you change its form, you will understand the only way to reduce laminations in such material is to change the characteristics of the clay itself by the addition of material that is not inclined to laminate, such as grog or sharp sand. In many cases this seems the only effective way. Preparation of the material is very important. It should be properly ground and the very best pug mill obtainable should always be used.

Laminations are formed by slippage of clay on clay and forming strata more or less poorly bonded together. The slippage comes from a different rate of travel of the material at different points in the cross section and from revolving or twisting in the space between die and auger.

When the clay leaves the auger on its way to the die it is lain together in spiral formation, in round section with a void in the center and lines of cleavage radiating from the center (See Fig. 1.)

These close up under pressure, leaving strata, and as the center of the column is closer to the die, has less distance to travel and less resistance to overcome, the center travels faster than the outside; hence, the strata become conical, longitudinally and elliptical in cross section. (See Fig. 2.) It is believed that the length of this cone depends somewhat on the relative areas of die to auger and distance from end of auger to die outlet. The diameter of the auger should be of sufficient size to cover the corners of the die well. (See Figs. 3 and 4.)

In addition to auger laminations, friction between clay and die set up additional laminations near the surface of the column of clay. These differ from auger laminations in that the lines are parallel and not conical.

It is the practice of most manufacturers to add an extension to the machine for attaching the die, allowing this extension to fill with clay and form its own channel from the discharge end of the auger to the inlet of the die. (See Fig. 5.)

This is naturally the easiest way, particularly where various sizes ware is made on the same machine; others extend the die all the way back to the auger, making an artificial channel for gradually forming the clay to the desired shape and size. (See Fig. 6.)

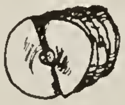


Fig. 1

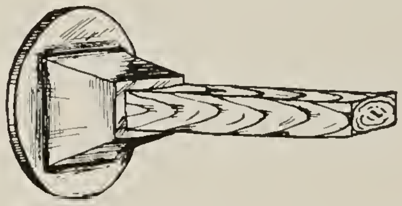
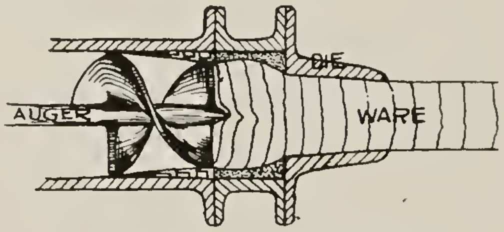
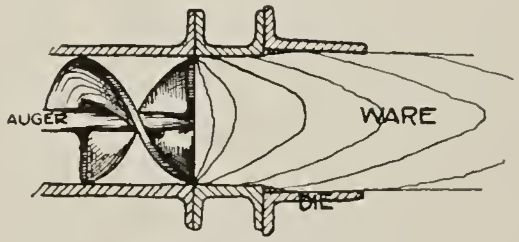


Fig. 2



BETTER PROPORTION AUGER TO DIE

Fig. 3



AUGER TOO SMALL FOR DIE

Fig. 4

A substitute for the above is a separate "former" behind the die and in front of the auger. (See Fig. 7.) A number of these have been made but there has not been the opportunity for checking results so that results are not definitely known.

That some of the auger laminations are destroyed or changed between the auger and the die is reasonably certain. That the proper distance detween the auger and die varies with different clays, varying from 2½ to 15 inches; this is determined by trial and error until the correct distance is found.

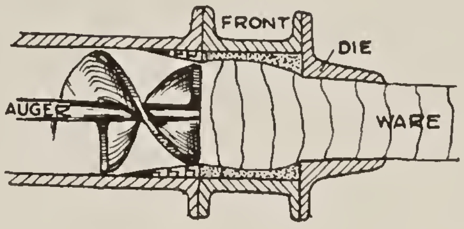
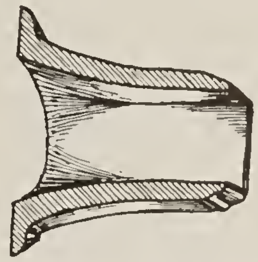


Fig. 5



PROVISION FOR LUBRICATION NOT SHOWN

Fig. 6

At various times augers having one, two, three and four blades have been used. A single blade will show the highest production efficiency for power consumption with coarser laminations; a two-blade auger permits of setting the die closer to the auger without showing a corrugated surface on the ware. The drop in efficiency is slight and the structure is generally somewhat improved.

The three and four-blade auger generally is too low in efficiency to be considered except in extreme cases, but do show finer laminations in clays that laminate badly.

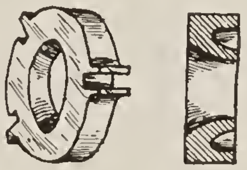


Fig. 7

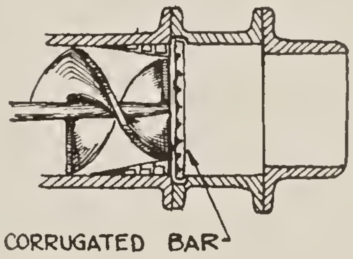


Fig. 8

A thin steel bar located across and rigidly attached in front of the auger prevents the formation of the laminations caused by clay twisting or turning with the auger. (See Fig. 8.)

One of our trade journals published an article on the subject in which a tube was substituted for this bar, the tube extending through the walls of the machine front and having perforations through which air could escape from the clay to the atmosphere.

It has also been stated that a hollow auger shaft with suitable inlets would permit air to escape and prevent laminations.

Experience with six different auger machines, having the auger shaft made hollow for another purpose is that clay fills up these perforations. At any rate, great difficulty was found in excluding the clay and where these inlets are filled with clay, air can not escape to an extent that would be noticeably beneficial.

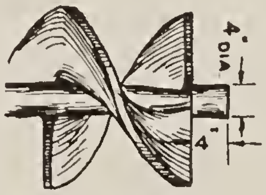


Fig. 9

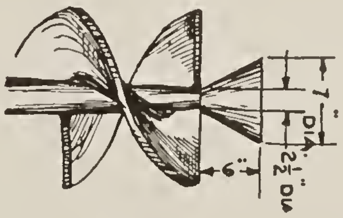


Fig. 10

For several years it has been the practice of some brick manufacturers to use an expressing auger with an extended hub. This extension projects four inches beyond the auger and is four inches in diameter. (See Fig. 9.)

This has improved the structure of the brick with their material. Another device is a metal cone attached to the hub of, and projecting beyond, the auger. (Fig. 10.)

The dimensions of this cone vary in different localities. When beginning the experiment the dimensions should be approximately as follows: Diameter at end where it is attached to auger, 2½ inches; diameter at end farthest from auger, 7 inches; length, 6 inches. This size is now in use but can be reduced if found necessary after trial.

With such a device it is necessary to move the die 10 inches or more away from the auger unless a smaller cone or a larger and longer die is used. Just why these devices improve the structure of the brick is difficult to understand, yet there are certain places in which they are of great benefit. There is a patented device originating in South America in which the auger shaft is hollow with a small shaft through it running in the opposite direction and with pins through the end projecting beyond this shaft ahead of the auger and in the path of the clay flowing from the auger to the die. (See Fig. 11.) A comparison of ware made with this device and from the same materials without it, shows the structure to be greatly improved when using this device in that clay. The objection to it is that it is difficult to keep clay out of the bearing where the small shaft projects through the auger shaft as it is located where the clay is under maximum pressure.

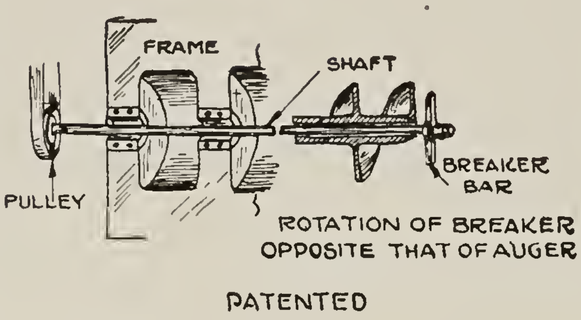


Fig. 11

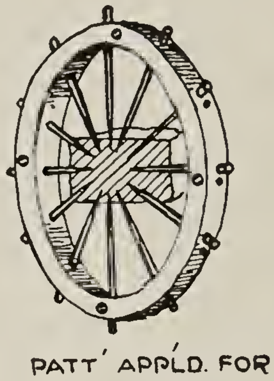


Fig. 12

It also calls for a separate drive and must require considerable power.

There are two more lamination breakers; one in use and one in preparation, both of which are being patented. In each case a ring is inserted between the barrel of the machine and the die front. In one of them knives extend inwardly, through holes in the ring and are adjustably secured so they may be made to project in the path of moving clay until the desired results are secured. (See Fig. 12.)

The other device is a ring mounted in the same manner as the above with two horizontal bars across the ring and two vertical bars joining the cross bars, with knife-like projections from each bar and in the path of the clay flowing from the die to the auger. (See Fig. 13.)

As between the two the former seems to be capable of best execution; owing to the knives being adjustable there is opportunity for giving just the correct exposure to the clay, which may be found by trial.

From the numerous devices in use that have actually improved the structure of the brick, and as all of them have been applied between the auger and the die, it is apparent that they effect only laminations that are caused by the auger, by the revolving of the clay after it leaves the auger, by the change from round to rectangular cross section and from a large to a smaller section, and that they can not influence laminations caused by the die itself. They increase power consumption or retard production somewhat. Also, all of them are for use when making brick and are not applicable to hollow ware.

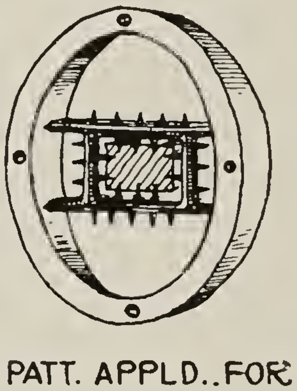


Fig. 13

The turning or twisting of the clay after it leaves the auger is responsible for the shape of the S-shaped check in the center of the column of bricks made from certain clays. If the clay did not turn the check would be horizontal instead of S-shaped. (See Fig. 14.)

Cross bars directly in front of the auger stop the turning of the clay and change the shape of this check.

As previously stated, many clays do not laminate seriously and when one is encountered that calls for treatment, the first thing is to look for a sharp sand that will burn the right color, or a way of reclaiming waste material and mixing it in as "grog" with the raw clay, and mix it well.

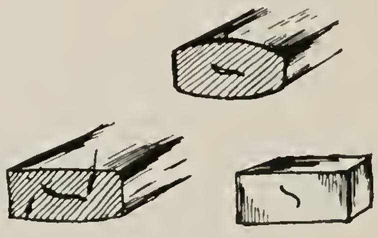


Fig. 14

If neither is convenient so as to be inexpensive, then one of the devices above described should be resorted to, in the order named.

The cross bar (Fig. 8) as being the least expensive; then lamination breaker (Fig. 12) as being capable of better execution, preventing the clay from revolving and cutting up laminations from the auger. The Cone (Fig. 10.)

The problem of dies is not so serious, they having been developed to the extent that they do not cause serious laminations except in rare cases. They are pretty well standardized as to taper and length and all are of the lubricating variety.

The above mostly pertains to the manufacture of brick.

In the manufacture of hollow tile and fire-proofing, the bridges which support the cores answer the same purpose as some of the lamination breakers previously described.The dies being non-lubricating, laminations form in the material in passing through to a greater extent than in brick dies.

The nature of the hollow block die makes proper lubrication difficult, especially when it is desired to lubricate the cores which form the cells as well as the former for the outside walls.

There is more room for improvement in dies for this service than for making brick.

It is the opinion of some very practical men that were all the air exhausted from the clay as it is passed through the machine and before reaching the die, that laminations would not form. There have been a number of patents taken out on devices for separating and exhausting air from the clay some of which have expired and none of them have come into general use.

There is one that was designed by the writer but unfortunately for this paper, it is in use in clay that does not laminate. For that reason it does not shed any light as to this being a preventive of laminations.

It does, however, make a denser structure, increasing the weight of the ware 4½ pounds per cubic foot. All of these devices are intended for the purpose of breaking up "auger laminations" and might lead to the conclusion that the auger should be dispensed with entirely.

As a matter of fact, laminating clays laminate just as badly when brick are made on a plunger machine, on a sewer pipe press or on a roller machine in which a pair of rolls are used instead of a plunger or an auger.

This has been demonstrated repeatedly and at great cost.

The laminations are there and just as serious although in somewhat different formation. As these machines have become obsolete for the purpose no attempt will be made to analyze the causes for these laminations.

It is obvious, however, that the same devices used to break up or prevent the formation of laminations caused directly by the auger will not apply to any machine other than the auger machine with the exception of the one shown in Fig. 11, which has been applied to a sewer pipe press.

Further experimenting is going on practically all the time, the quality of bricks has already reached a high standard and laminations as a serious problem will no doubt eventually disappear.

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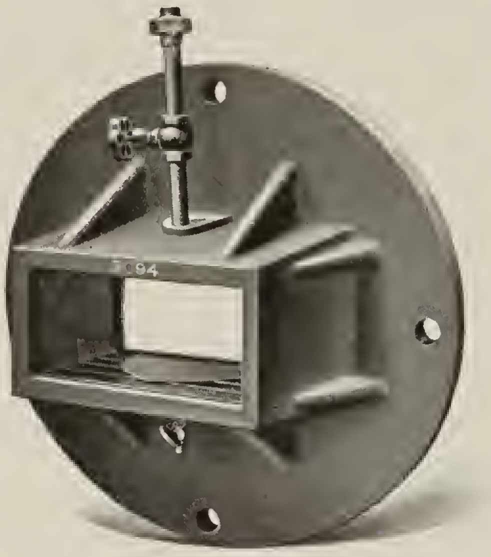
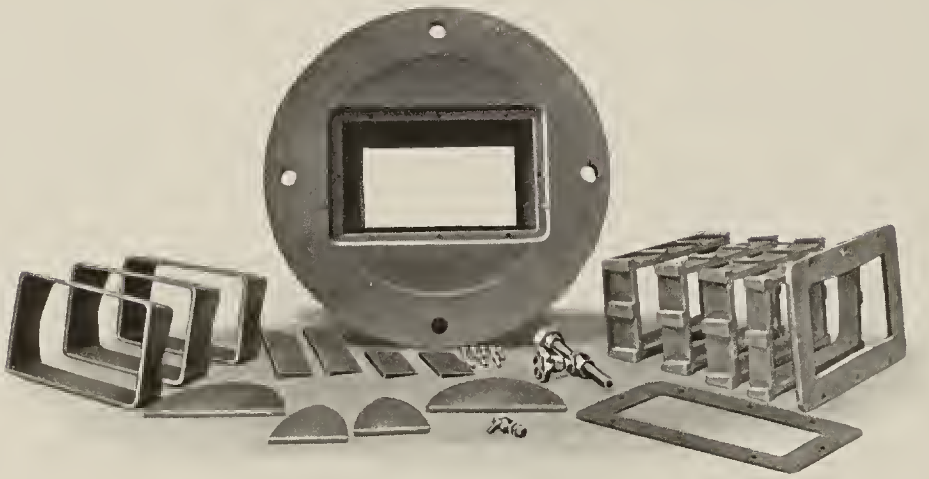
蒙索樣品無任歡迎

The above is an advertisement of a brick plant in Shanghai, China. It is completely equipped with the "American Line" of machinery. Mr. T. Y. Liu, the owner and manager, has two plants, the other being at Chekiang. Mr. Liu is making a decided success of his plants. He has introduced American methods as well as American Machinery and has attained a record of production which was thought impossible in China. Mr. Liu came to Bucyrus, Ohio, where, in the clay testing department of the W. A. Riddell Company, he spent some months in learning the essentials of making clay products. That he made the most of his opportunity is attested in his success. His ad in both English and Chinese language is a novelty.

Die Department

American Niedergesaess Lubricating Side Cut Brick Die

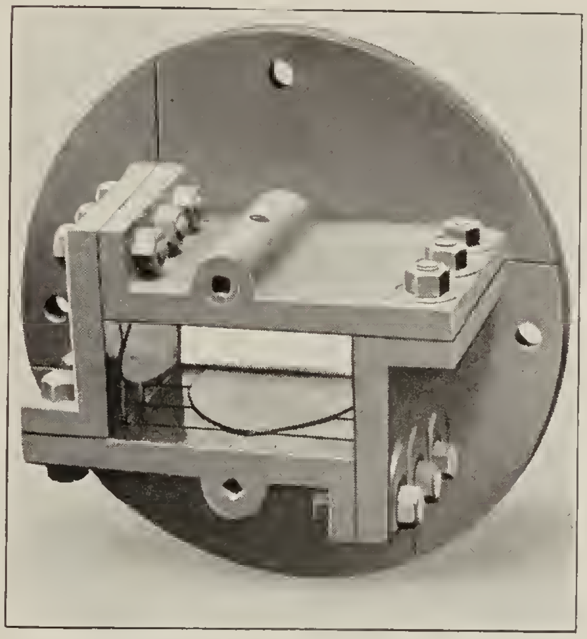




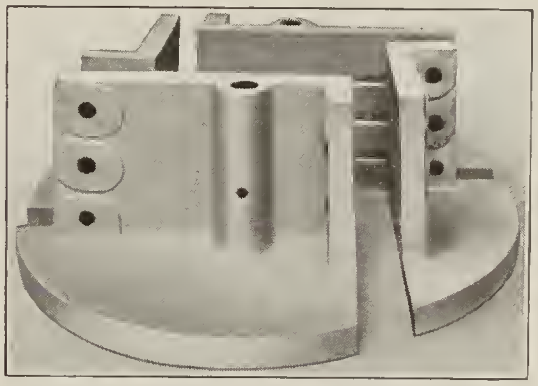
TO manufacture brick successfully it is highly essential to have a first class brick die to be used in connection with the auger machine. The American Niedergesaess Lubricating Die has been used for more than thirty years and has proven successful in many different kinds of clays. It can be lubricated with either water, oil or steam, according to the character of the clay to be worked. The connecting pipe with valve, shown in the cut, may either lead to the boiler or a water tank, or to an oil reservoir. On the right are shown four cast iron liners having channels around their edges. These liners fit into the die casing. On the left are shown the sheet steel liners which fit into each cast iron liner. The front four sheet steel liners fit into the front cast iron liners and make the sharp corners on the brick. When round corners are desired on the brick these are replaced by a liner similar to the second liner. The four round edged plates in the foreground are termed the aprons, and are put in last over all the liners. The whole is held in the die casing by the stay plate. Proper packing, cement or putty is used to prevent leakage. The duties of the aprons are two-fold: to prevent wearing of the liners and to exclude the lubricant where not wanted so as to insure an even flow. It is highly necessary that only clean fluid be used, as otherwise the channels will become filled up, making the die inefficient. For some clays dry steam answers the purpose better than either water or oil.

Each die is fitted complete and inspected before shipment. The size and description are carefully recorded for future reference.

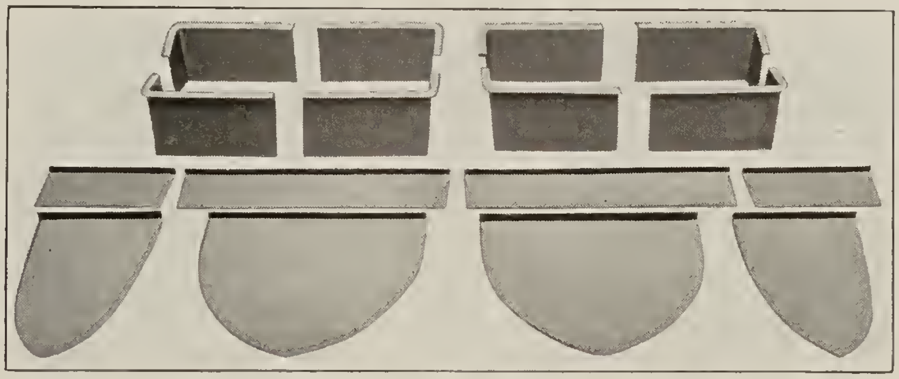
Ehrick Lubricating Brick Die



Ehrick Lubricating Brick Die



Case of Ehrick Lubricating Die



Liners for Ehrick Lubricating Die

THE Ehrick Lubricating Die has all the advantages of the old style Niedergesaess Lubricating Brick Die and additional advantages in that the wearing parts may be renewed in less time and at less expense, keeping the size of bricks practically uniform at all times. This design also permits us to carry all parts for standard brick dies in stock machined complete up to the drilling and to give 48-hour service after receipt of orders. Either steam, oil or water may be used for lubrication.

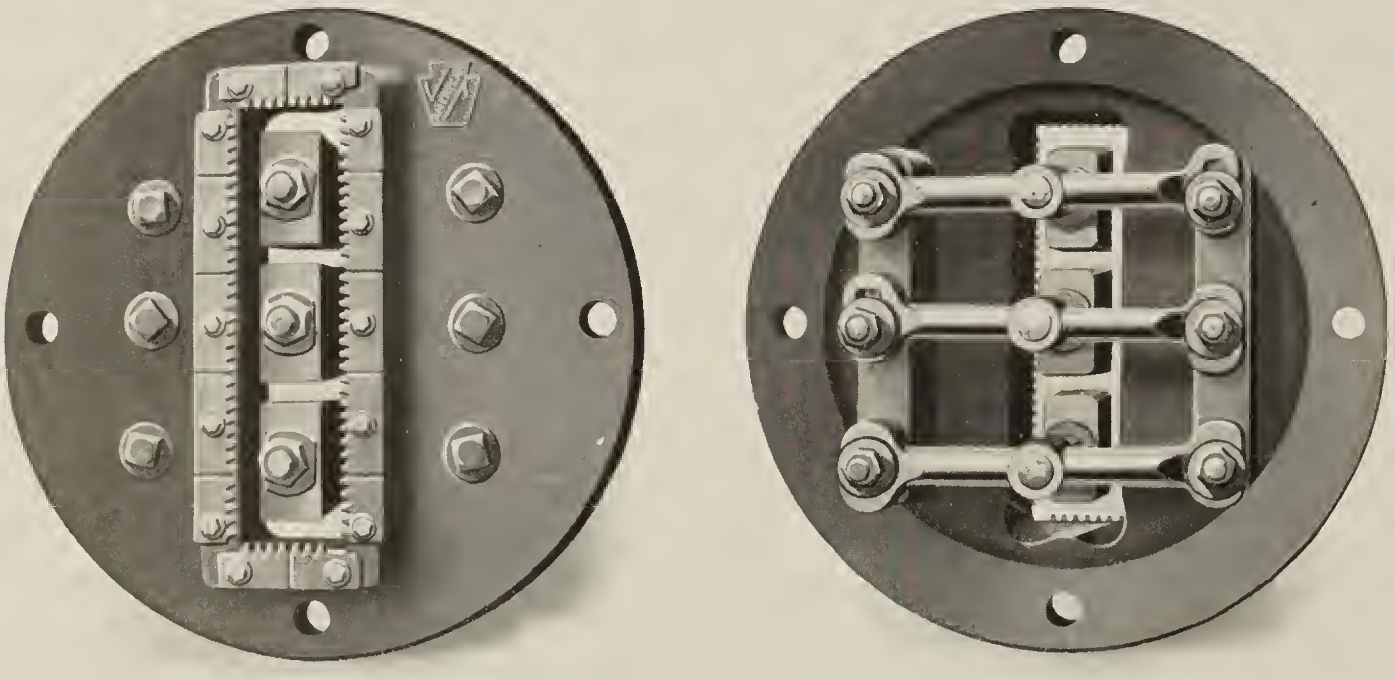
Hollow Ware Dies

WE make a specialty of dies for all kinds of hollow ware. Our Die Department is in the hands of the most competent die-makers in the trade, and the greatest of care is given to all die orders.

We solicit correspondence in regard to all die work, and especially for the manufacture of hollow ware.

We will be pleased to send you printed matter and any information you may desire on this subject.

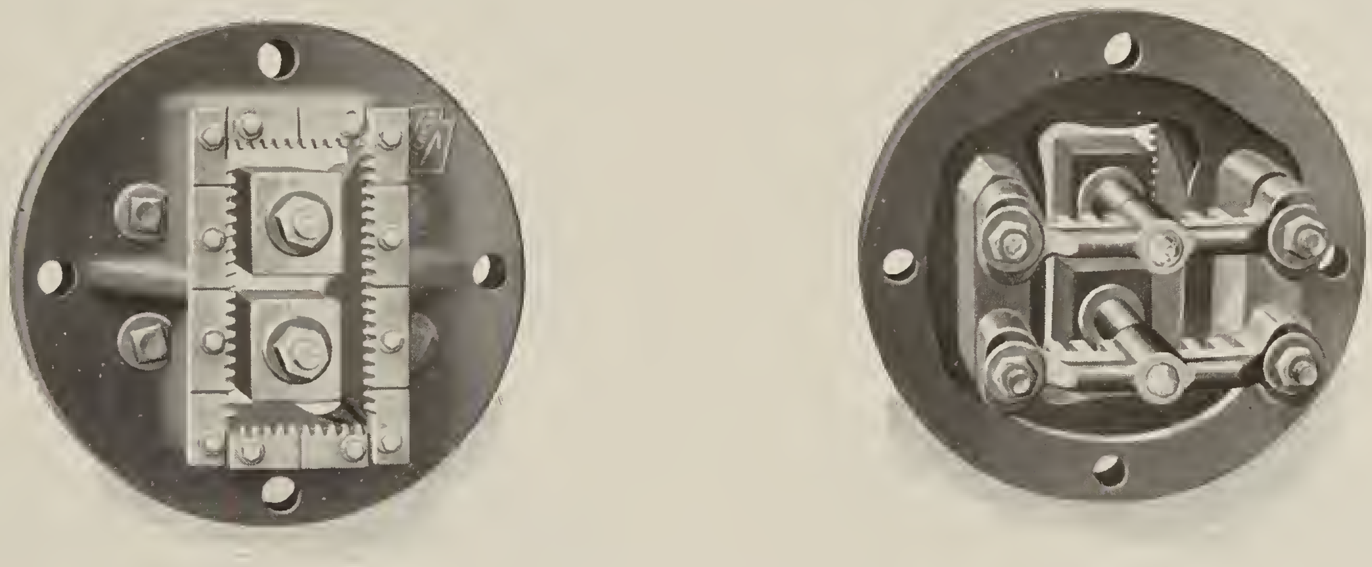
DRY HOLLOW BLOCK DIES



Front View

Rear View

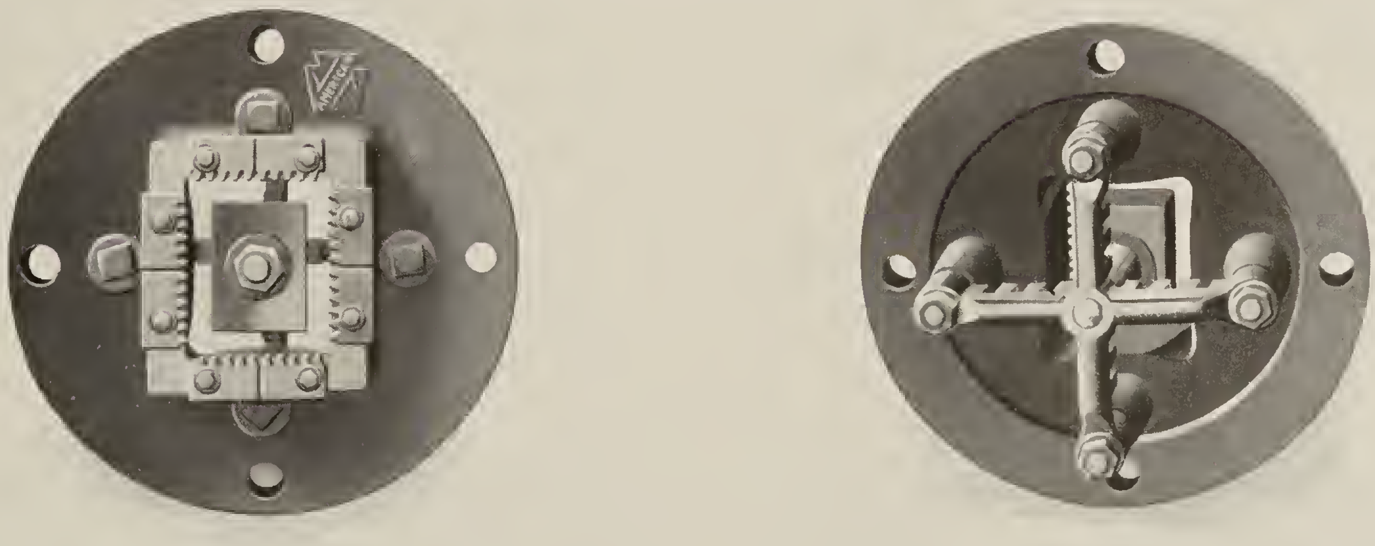
4-in. x 12-in. Hollow Block Die



Front View

Rear View

5-in. x 8-in. Hollow Block Die



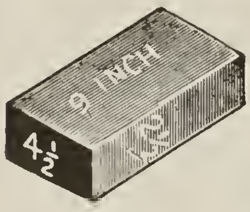
Front View

Rear View

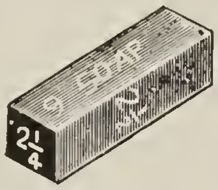
4-in. x 5-in. Hollow Block Die

Standard Nine-Inch Fire Brick Shapes

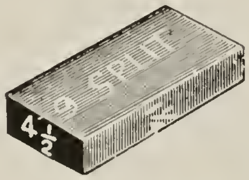
The following cuts represent the principal nine-inch shapes that are used, and dimensions given are the long-established standards adopted by fire brick manufacturers.



9-Inch



Soap



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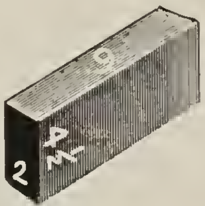

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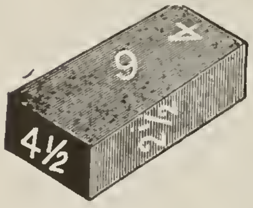

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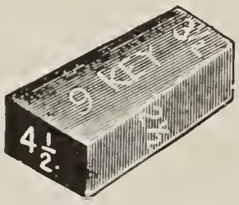

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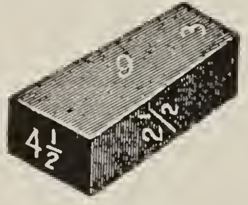

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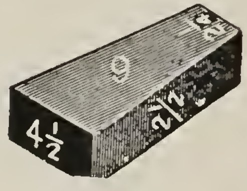

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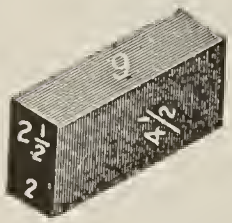

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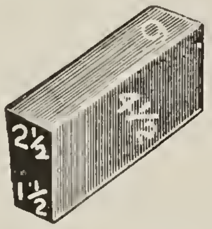

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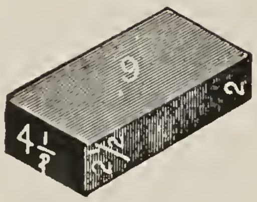

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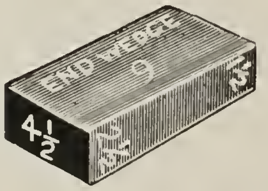

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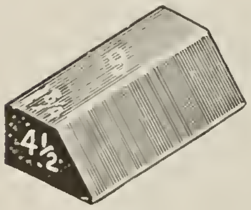
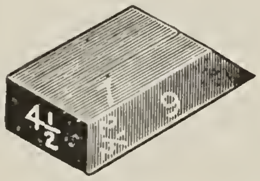
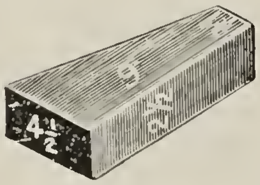


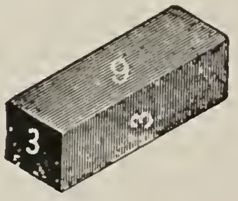
Side Skew



End Skew



Skew Back



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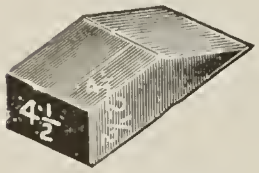

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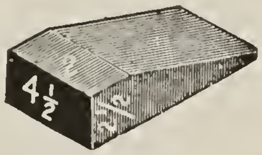

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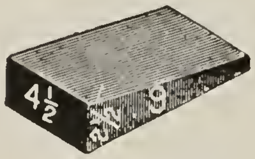

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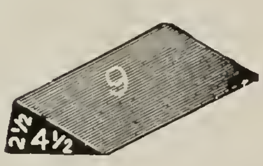
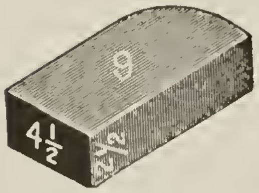


Feather Edge



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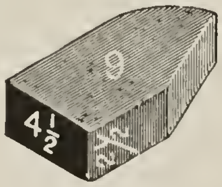

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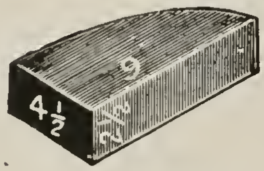

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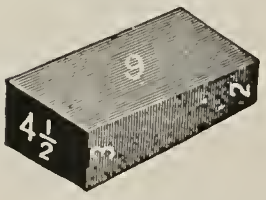
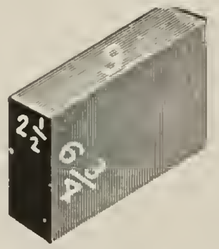
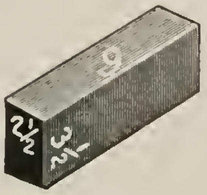


No. 3 Bull Head

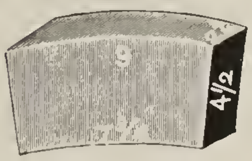


Large 9-Inch



Small 9-Inch

Circle Brick



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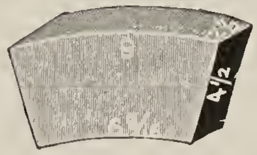

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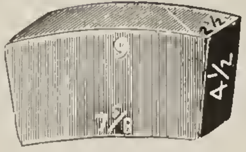

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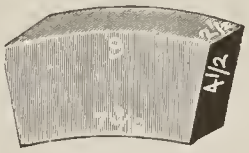
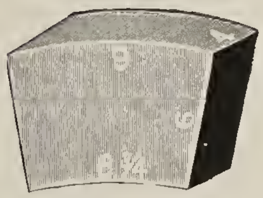


No. 5 60-Inch Circle

Cupola Blocks



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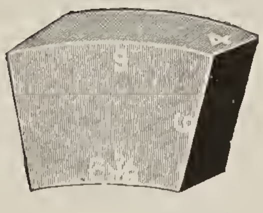

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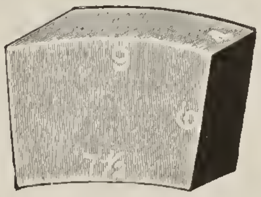

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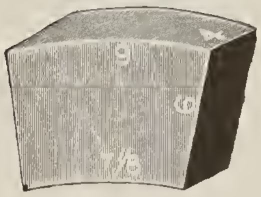
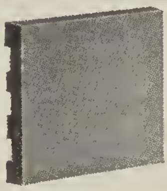
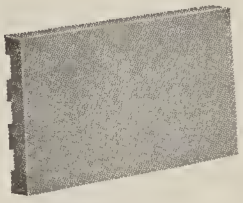


No. 4 60-Inch Circle

Quarry Tile



6 x 6 x 1



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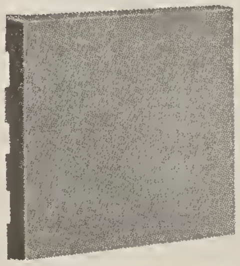
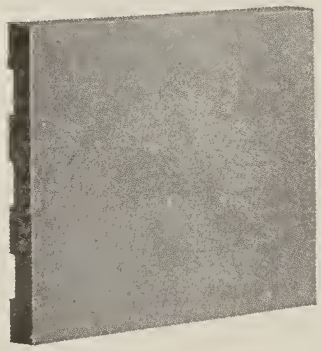
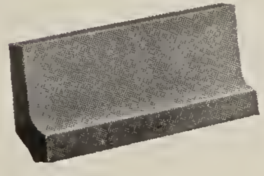
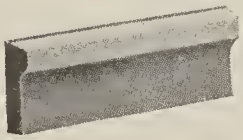


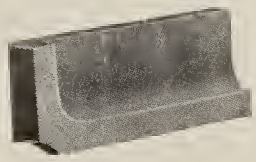
9 x 9 x 1⅛

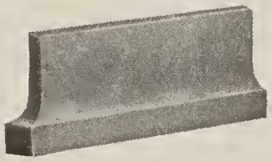


12 x 12 x 1½

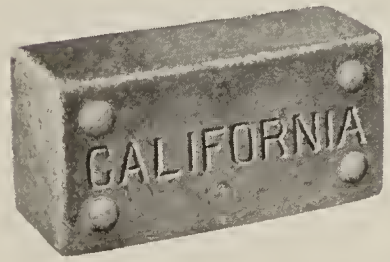


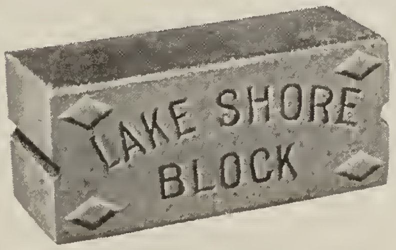


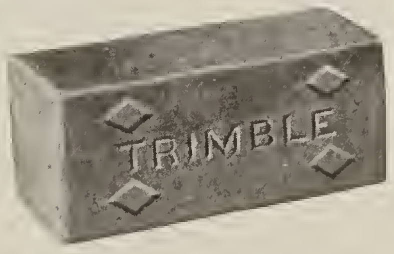


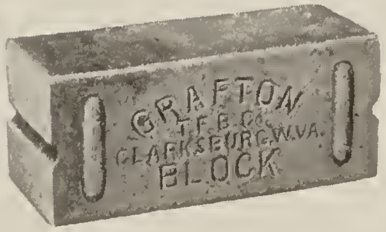


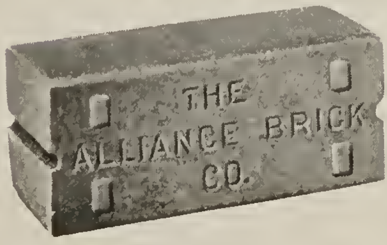
Standard Paving Block Designs

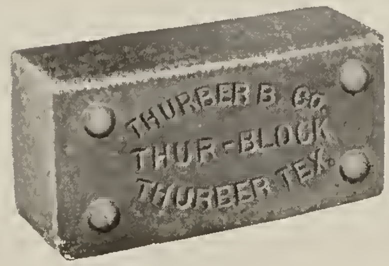


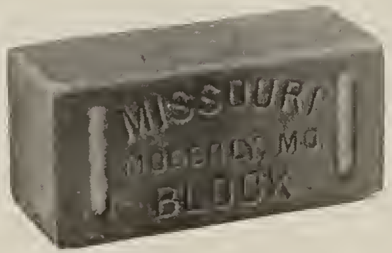


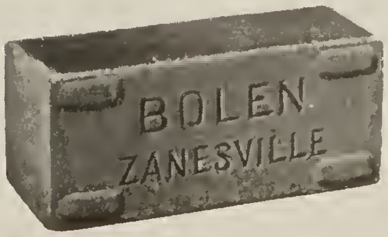




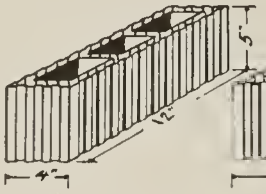




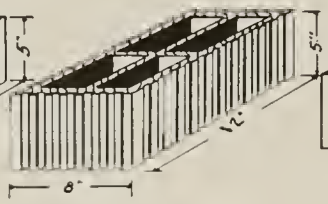




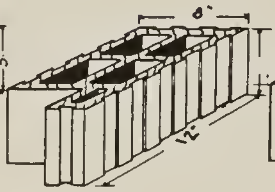
Jumbo Brick



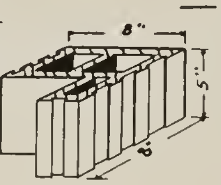
5"x4"x12" Corner Block



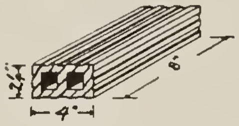
5"x8"x12" Corner Block



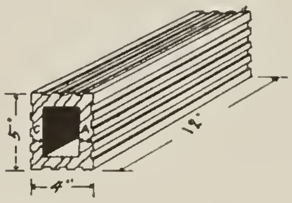
5"x8"x12" Jamb Block



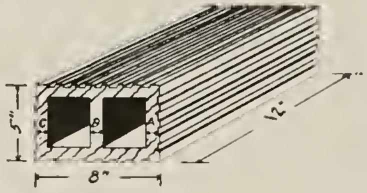
5"x8"x8" Jamb Block



Standard Hollow Brick

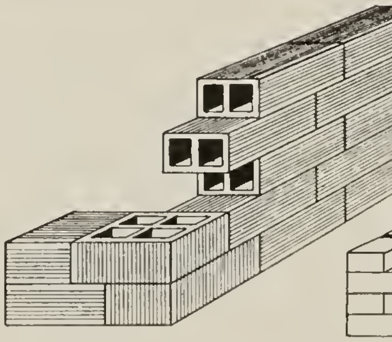


5"x4"x12" Jumbo Brick

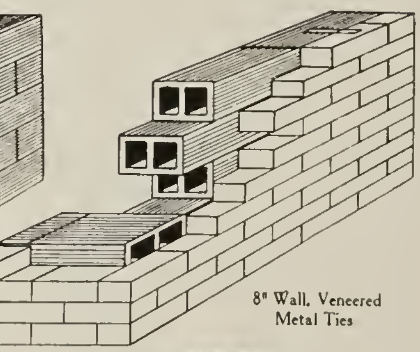


5"x8"x12" Jumbo Brick

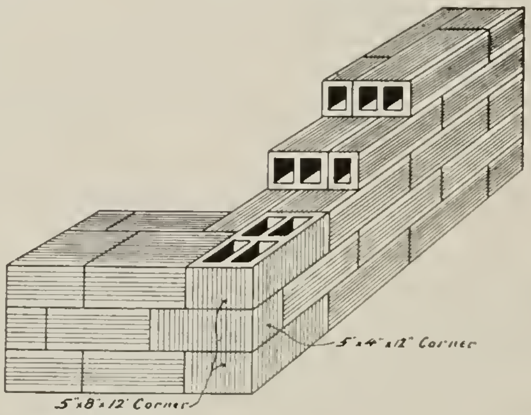
Jumbo Brick Wall with Brick Veneer



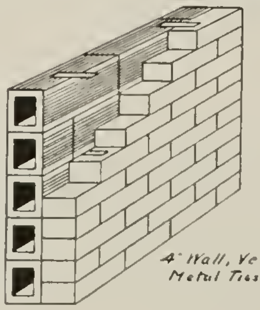
8" Wall.



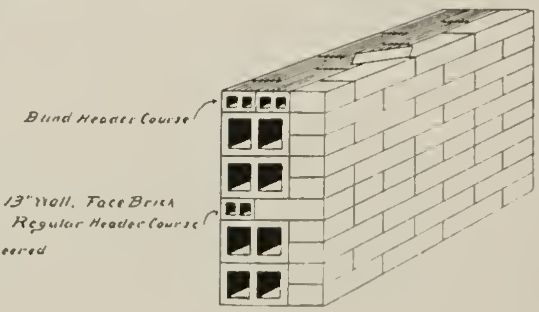
8" Wall, Veneered Metal Ties



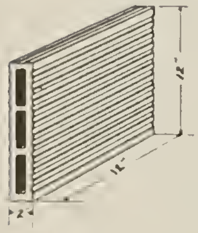
13" Wall. 8" and 4"



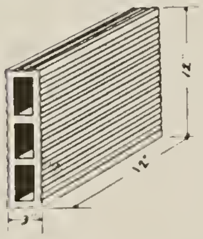
4" Wall, Veneered Metal Ties



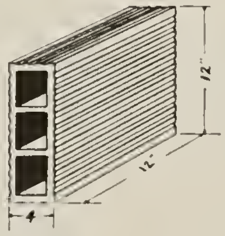
Partition Tile



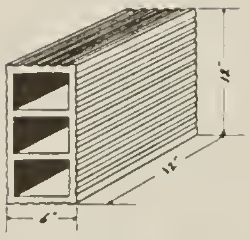
2" Partition.



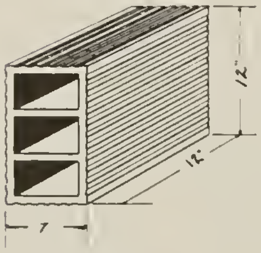
3" Partition.



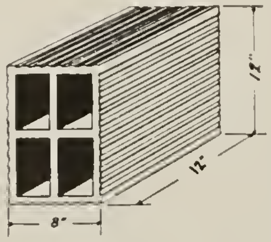
4" Partition.



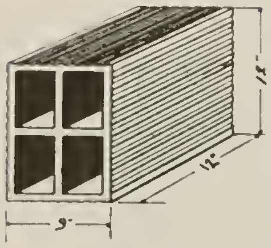
5" or 6" Partition.



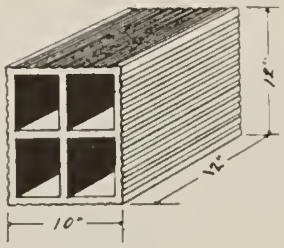
7" Partition.



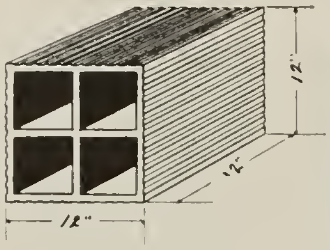
8" Partition



9" Partition.

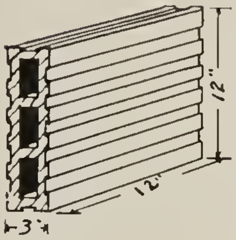


10" Partition.

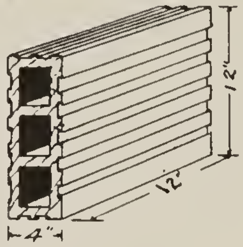


12" Partition.

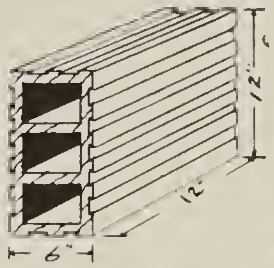
Hollow Building Block



3"x12"x12"



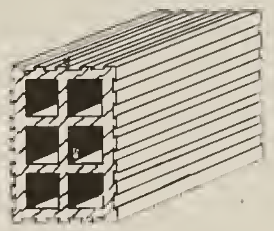
4"x12"x12"



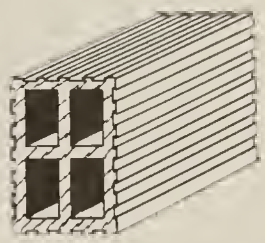
6"x12"x12"

Jamb Blocks

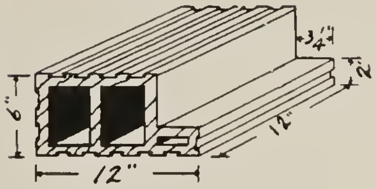
Half Jamb Blocks



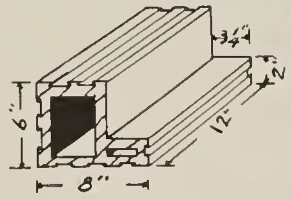
8"x12"x12"



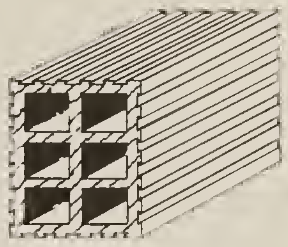
8"x12"x12"



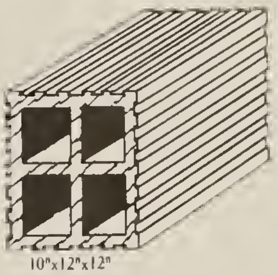
6"x12"x12"



6"x12"x8"



10"x12"x12"



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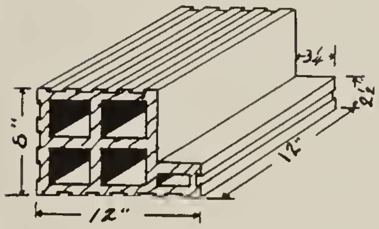

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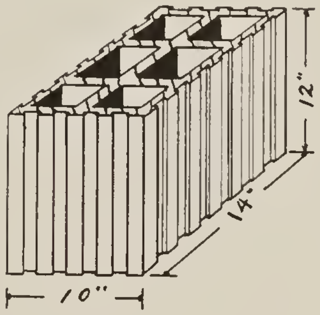
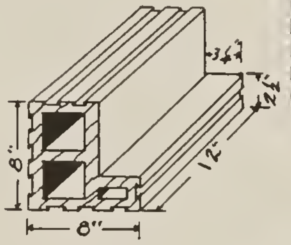


10"x14"x12"



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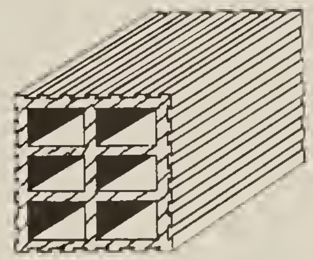
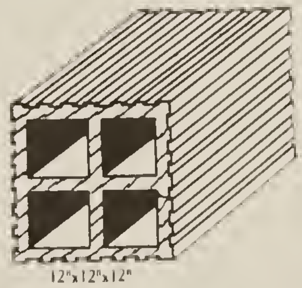


12"x12"x12"



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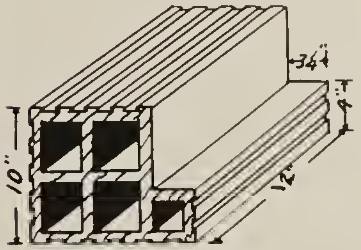
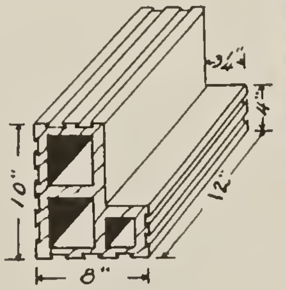
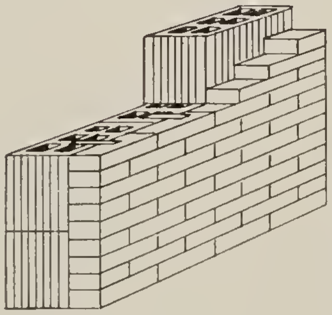


10"x12"x12"

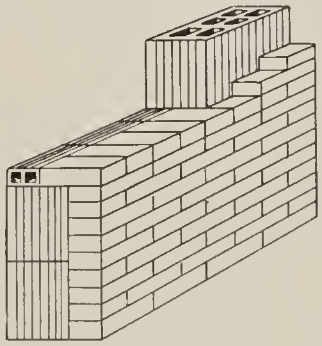


10"x12"x8"

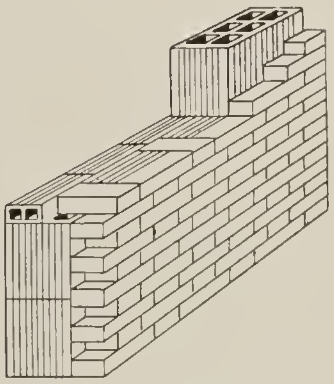
Hollow Block Wall Veneered with Brick



Metal Ties.



Header Courses.



Flemish Bond.

Fire-Proof Building Material

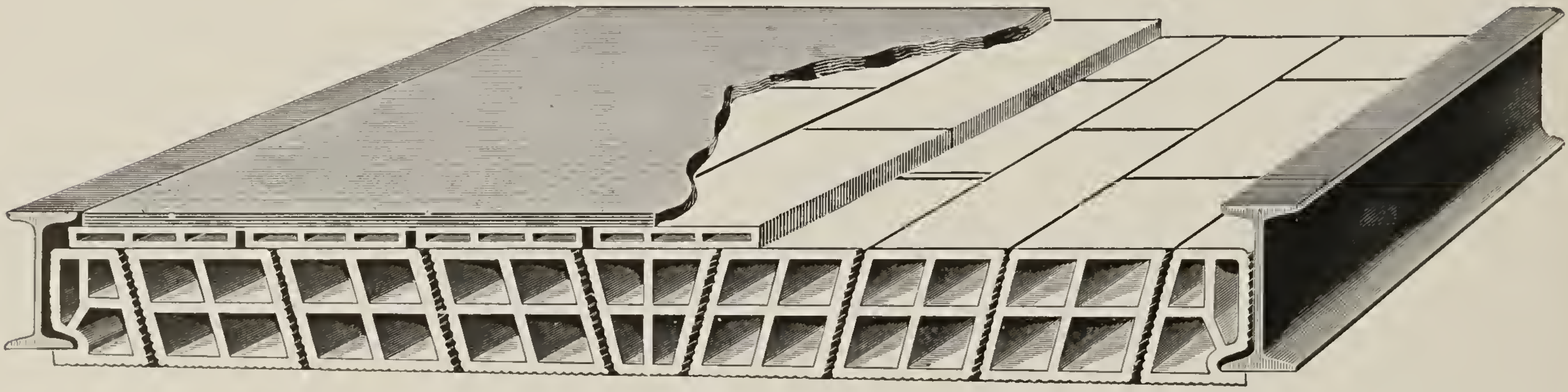
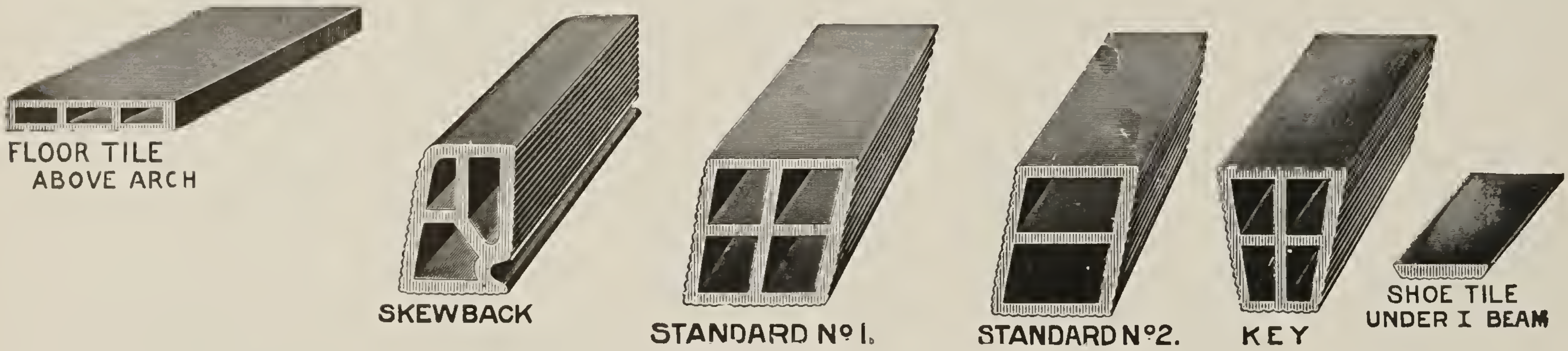


FIG. A.

FIG. B.



FLOOR TILE ABOVE ARCH

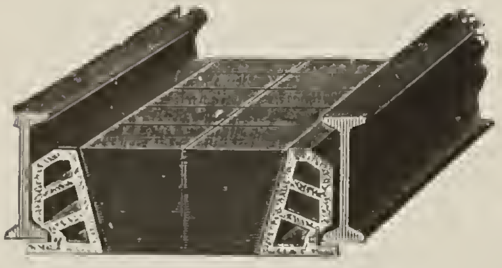
SKEWBACK

STANDARD Nº 1.

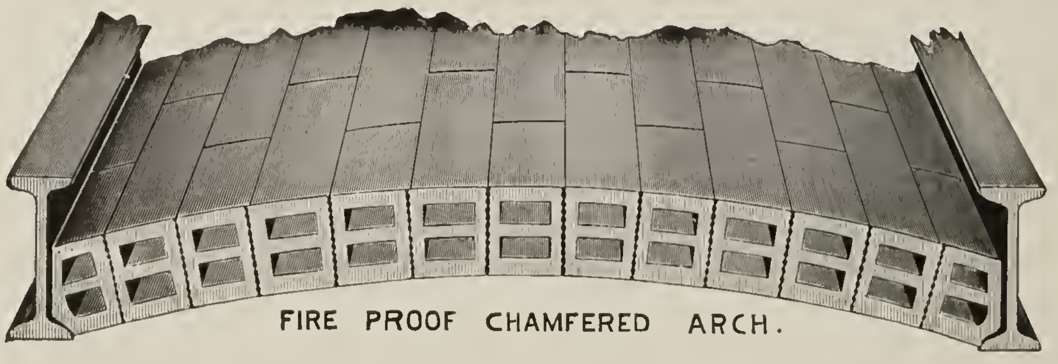
STANDARD Nº 2.

KEY

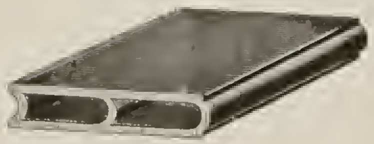
SHOE TILE UNDER I BEAM



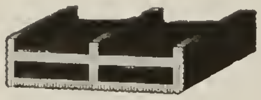
End and Side Construction
Combined Floor Arch No. 2



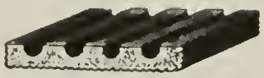
FIRE PROOF CHAMFERED ARCH.



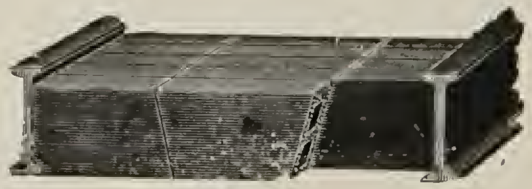
BOOK TILE



FURRING TILE.



FURRING TILE.



End Construction
Floor Arch No. 1

Standard Sizes of Clay Products

The following standard sizes of clay products have been recommended by the U. S. government and adopted by the clay products trade.

STANDARD SIZE OF BRICK

Roman Brick	12″ x 3¾″ x 1½″
Norman Brick	12″ x 3¾″ x 2⅜″
Common Brick	8″ x 2¼″ x 3¾″
Face Brick	8″ x 2¼″ x 3¾″

STANDARD LOAD BEARING TILE

End Construction		Weight
3 4/4 x 12 x 12	3 cell	20 lb.
6 x 12 x 12	6 cell	30 lb.
8 x 12 x 12	6 cell	36 lb.
10 x 12 x 12	6 cell	42 lb.
12 x 12 x 12	6 cell	48 lb.

Side Construction

3¾ x 5 x 12	1 cell	9
8 x 5 x 12	2 cell	16
8 x 5 x 12 ("L" shaped)		16
8 x 6¼ x 12 ("T" shaped)	4 cell	16
8 x 7¾ x 12 (Square)	6 cell	24
8 x 10¼ x 12 ("H" shaped)	7 cell	32

Standard Partition Tile

3 x 12 x 12	3 cells	15
4 x 12 x 12	3 cells	16
6 x 12 x 12	3 cells	22
8 x 12 x 12	4 cells	30
10 x 12 x 12	4 cells	36
12 x 12 x 12	4 cells	40

Standard Split Furring Tile

2 x 12 x 12	9

Standard Book Tile

3 x 12 x 18 x 24 per square foot	18

STANDARD PAVING BRICK SIZES

Plain Wire-Cut Brick
(Vertical Fibre Lugless)

2½″ x 4″ x 8½″
3 ″ x 4″ x 8½″
3½″ x 4″ x 8½″

Repressed Lug Brick

3½″ x 4″ x 8½″

Wire-Cut Lug Brick (Dunn)

3½″ x 4″ x 8½″

Special Hillside Lug Brick

3½″ x 4″ x 8½″

VITRIFIED PAVING BRICK

Recognized Varieties and Sizes
(As usually laid)

Plain Wire-Cut Brick
(Vertical Fibre Lugless)

*Depth	*Width	*Length
2½″	4″	4½″
3 ″	4″	8½″
3½″	4″	8½″

Repressed Lug Brick

4″	3½″	8½″

Wire-Cut Lug Brick (Dunn)

4″	3½″	8½″

*Tolerance of ⅛-inch in width and depth and ½-inch in length allowable.

Beauty in Brick Home

CLAY products in home construction are at once safe, sound and economical. They make the occupants and the investment safe. They have so many points of advantage that there is no longer an argument.

In cost they are but little more than a less attractive and more dangerous construction.

The insurance advantage of Clay Products homes is recognized by insurance companies in the lower rate which is based absolutely on Clay Products homes being a safer, better, risk.

Clay Products homes are more liveable. Life is on a higher plane and is more enjoyable because of the higher standing of Clay Products homes.

They improve the neighborhood and are a better security in case there is need to negotiate a loan.

A Beautiful Country Home

Comparative Cost of Brick and Frame Small Home

Brick Homes Fit the Surroundings

The result of a recent survey in Denver covering the comparative costs of construction between brick and frame should be accepted as final even by the most skeptical. There can be no question as to the authenticity, accuracy and worth of the findings. This survey was conducted by the Architects' Small House Service Bureau, Mountain Division, with the cooperation of the lumber, the brick and cement interests.

Bids were taken upon a one-story bungalow, estimated to cost about $6,000. Seven types of construction were figured, with three kinds of foundation. Only the wall costs were considered for the purposes of the survey, all other features being the same in all of the types. Of the foundations one of 8-inch concrete to joists was taken as most representative of conditions generally encountered throughout the country.

The prevailing wages per day for labor in Denver were: Bricklayers $12, tile setters $13, plasterers $12, painters $10, carpenters $9 and hod carriers $7. Materials prices were: Sand $1.30, gravel $2, mortar $5 per cubic yard. Form lumber $44, sheathing No. 1—$44, No. 2—$38, drop siding $60, lap siding $55, studding $44 a thousand ft. Wood lath $8 a thousand. Metal lath 24½c a yard. Face brick $25.50 a thousand. Common brick $12 a thousand. Cement 80c a sack.

At this scale of wages and these prices of materials the cheapest frame wall cost $1,107, using drop siding. A face brick wall, with common brick back-up, cost $1,224, a difference of only $117.

It was found that a common brick wall with stucco was $1,316 while the common brick wall without the stucco was $1,094.

This survey cannot be questioned or disputed. The findings as reported by the Architects' Small House Service Bureau were signed by the representatives of the lumber, the brick and the cement interests in Denver. The findings are final and *Very Convincing*.

Cost of Brick is Small Part of Building Expense

Analysis of the cost of buildings shows that frequently brick itself represents only 8.3 per cent of the total expense when overhead, profits and engineers' fees are included, and 11.25 per cent when only materials and labor are used as the basis for figuring. These percentages will vary in different localities but, according to The American Appraisal Co., they represent typical costs. Under modern conditions, the labor bill approximates 17.5 per cent of the total expense when work and materials only are figured, millwork 13.2 per cent, and lumber 20.5 per cent.

It is often a stock argument of a contractor that a brick building or dwelling costs 25% more. Therefore the accompanying graphs showing the costs which enter into a building will be of interest.

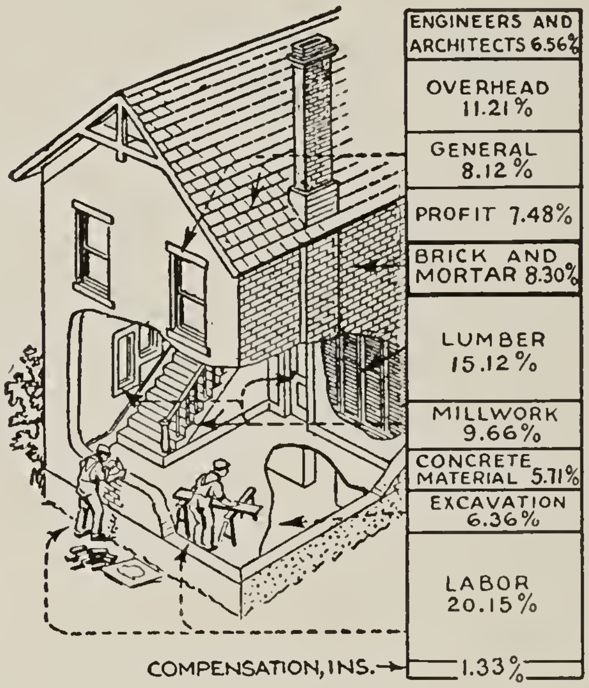
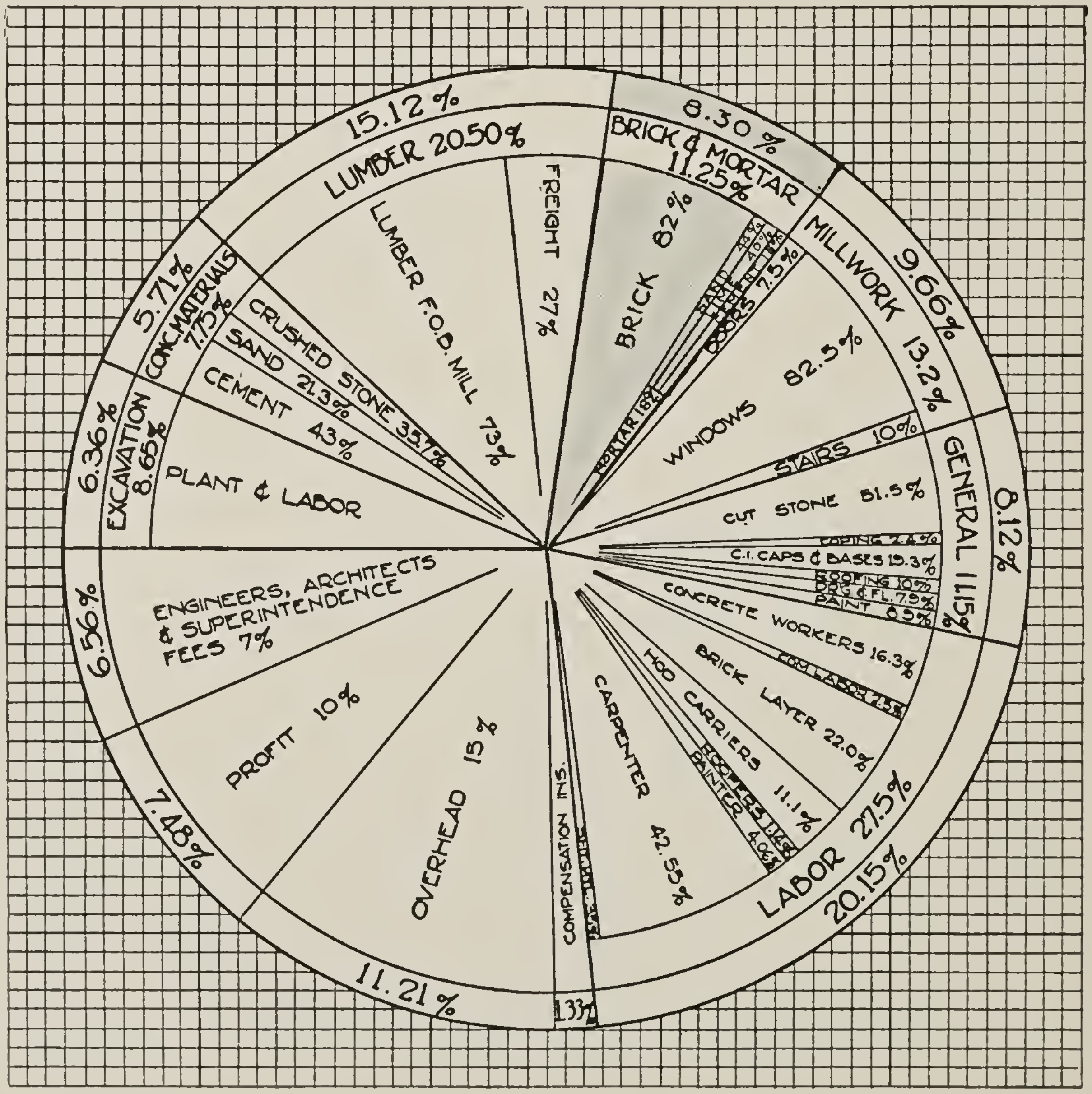


Diagram showing distribution of material and labor costs in an actual brick mill building. The percentages given in the outer circle represent the percentage to the total cost including overhead, profit, and engineers' fees. The percentages shown opposite the respective classifications represent the percentage of the total cost including only material and labor. Overhead and Profit are figured at 15% and 10% respectively on contractors' direct costs; architects' fees at 7% of the total of all other items. Compensation and liability insurance represent an average of 5% on labor only. These figures and the percentages shown in the diagram vary according to locality, price conditions, size and character of building.



WARCO
BUCYRUS
OHIO

Cutter Department

The "American Line" of Cutters

THE "American Line" of Cutters is complete, no matter what your needs in a cutter may be. From the smaller hand-operated cutters to the largest automatics we can exactly fill your wants. Our line of cutters is exceptionally meritorious, being designed and built by competent cutter men. The material and workmanship is all that could be asked and the operation of these cutters has been universally satisfactory.

No cutter leaves the plant without being rigidly inspected and tested, so that its operation will be a success from the moment it is started.

The extent of the "American Line" is such that we can exactly meet the needs of any plant without trying to adapt a cutter to any particular job.

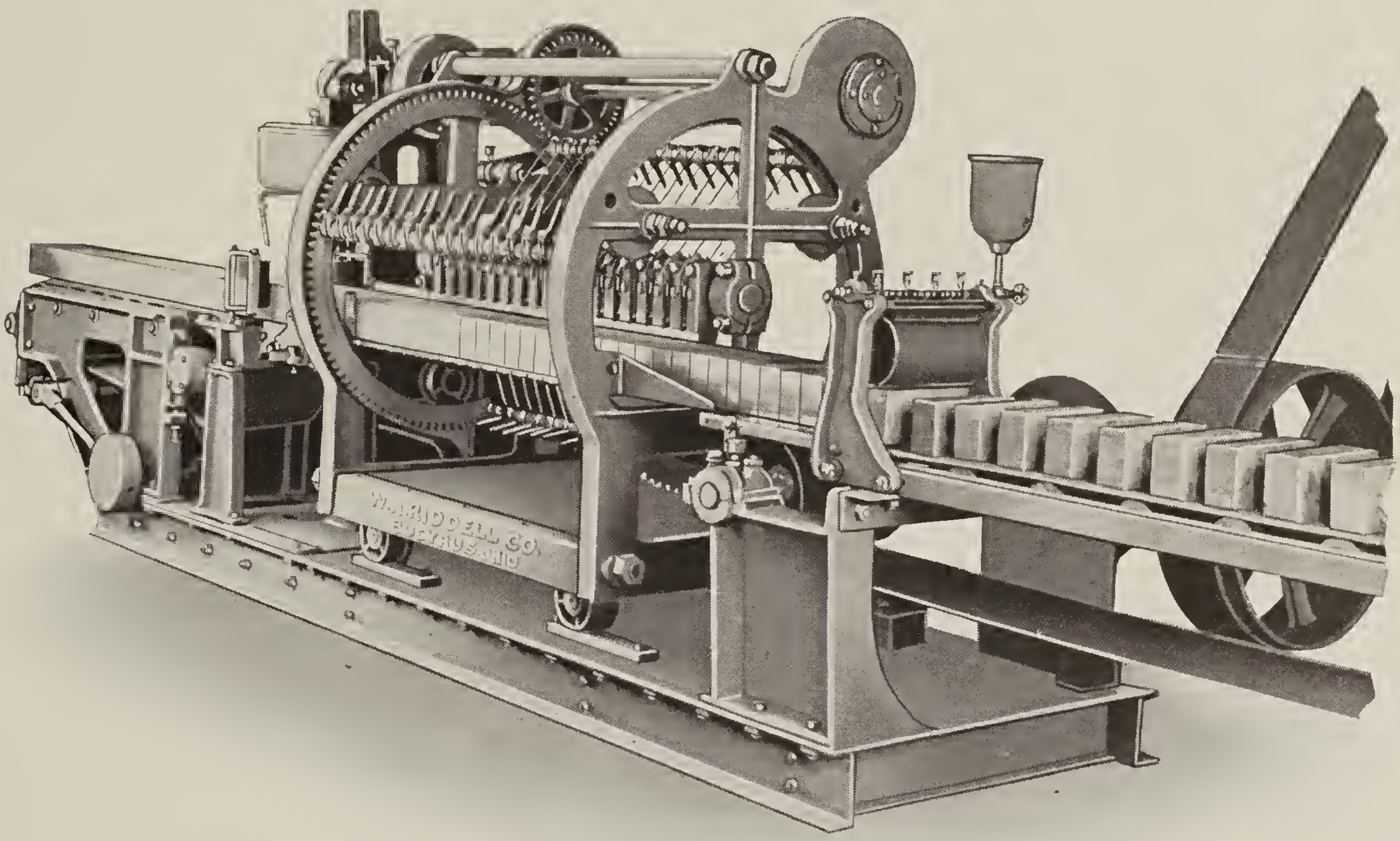
No matter what your cutter requirements are we will be pleased to hear from you, feeling sure that an investigation of our line will be to our mutual advantage.

American No. 492 "B" Automatic Brick Cutters

WE have built automatic brick cutters for many years and now have something to offer that excels in smoothness of operation, in accuracy of work performed, in simplicity, in durability and in convenience.

The 492-B and the 498-B Automatic Cutters differ only in size and capacity.

The cutting section is almost entirely built up of steel parts for the purpose of reducing the weight of moving parts that must be controlled by the bar of clay.



American No. 492-B Belt Driven Automatic Cutter

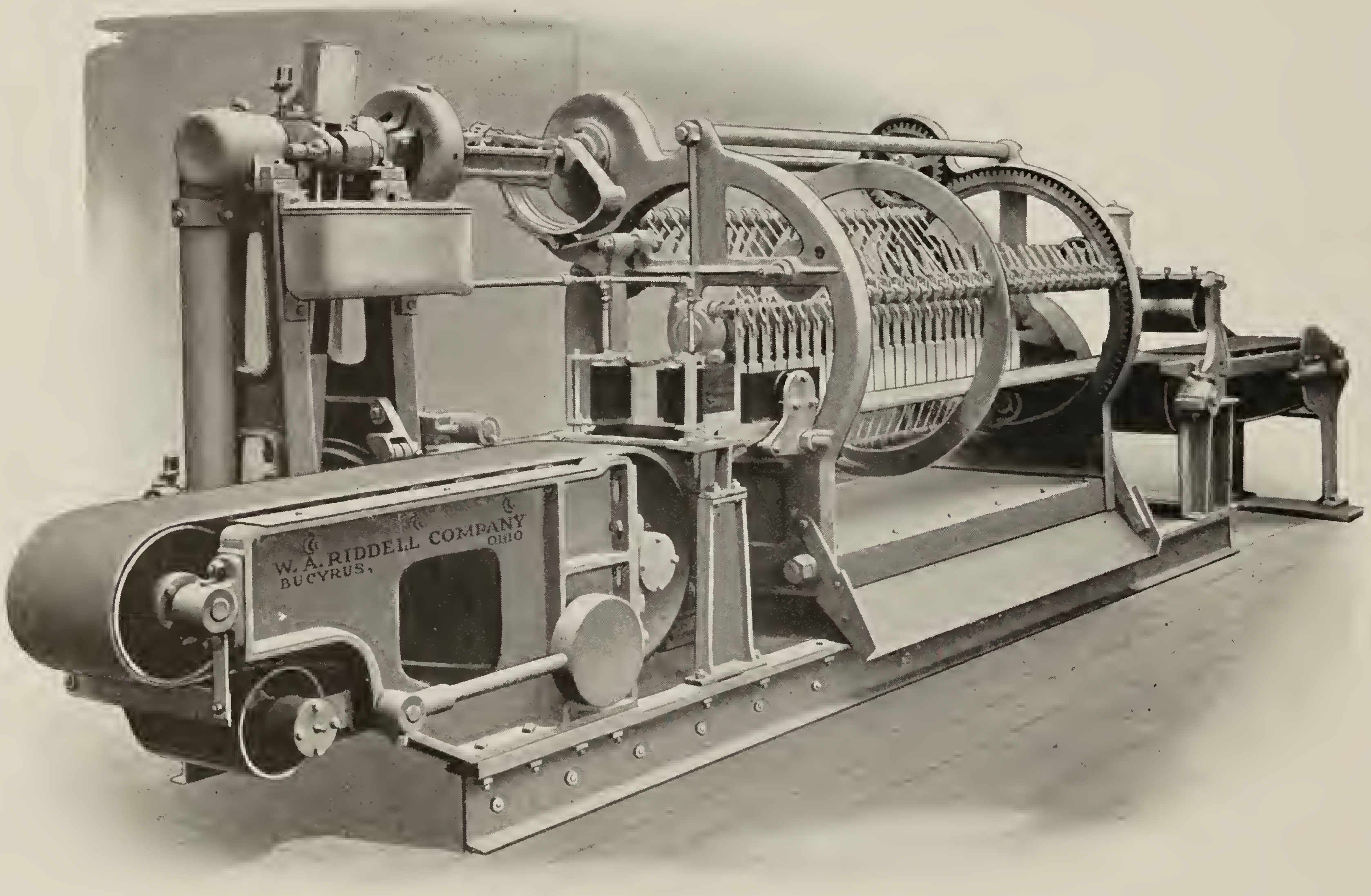
When you consider that the average weight of the cutting section of an automatic brick cutter is around 3,000 pounds, it will be apparent that it is a rather difficult matter for the column of clay to suddenly move it at exactly the same rate of travel while being cut into brick sizes, even with the assistance of gravity, springs or other devices and that upsetting the column of clay or crooked cuts are frequent occurrences. In building this section of the cutter of steel we have reduced the weight without impairing its strength and reduced the amount of defective brick in proportion to the reduction in weight of the cutting section. It also reduces wear and tear on the other parts of the cutter.

The mechanism for imparting motion to the cutting reel is a crank with a rack and pinion. This starts the reel gradually, accelerates rapidly and stops gradually.

The return movement of the cutting section to the starting position has the same speed characteristics as does the crank, that is, gradual acceleration and retardation. With this explanation of the mechanism for imparting motion to the cutting section it will be clear that the movements are very smooth as well as rapid and accurate.

Ball and roller bearings are used where they are best adapted. Practically all the machinery is above the dirt line and properly guarded. In the illustration the guard for excluding dirt from underneath the cutting section was removed to show the anti-friction rolls and the renewable track on which it is mounted.

The wire holders have springs for taking up stretch of wires located on the center ring and a simple lever on the outside wire bar. In fact this cutter has few parts, all of which are of the most simple form. A clamping device holds the cutting section to the bar of clay securely while cutting and without marring the brick.



American No. 498-B Automatic Brick Cutter

SPECIFICATIONS

Frame

The foundation framework is built up from channels under a cast iron base for the operating machinery.

Shafts

All shafts are of steel of ample diameter. The driving shaft is reversible and may be driven from either end and is enclosed in a steel tube where it passes the cutting section, eliminating danger to workmen.

Bearings

Ball bearings on measuring belt, pulleys and roller bearings on counter shaft.

The clutch is large in diameter, has manganese steel pawl and hardened steel pins, readily accessible for renewals when necessary.

Gears

All gears are cast steel with cut teeth. The rack and pinion are of steel and have cut teeth.

Drive

The standard cutter is driven by means of a belt from an overhead countershaft, or from the line shaft. We are prepared to supply a direct-connected motor drive when so desired.

Off-Bearing Belt

The cutter is furnished with a standard steel frame off-bearing belt 20 feet long, having a 12″, 4-ply canvas off-bearing belt. Additional length can be furnished when so desired.

No. 492-B AUTOMATIC BRICK CUTTER

Maximum capacity 7,500 bricks per hour. Maximum size ware with standard platens 5 x 10 in cross-section. Maximum distance center to center of end wires 40½″. That is, it will cut 16 2½″ brick at each cut or the equivalent in other thicknesses.

DIMENSIONS

Driving Pulley	24″ x 8″
Speed	75-85 R.P.M.
Length over all, including 20′ off-bearing belt	32′ 6″
Length of sills	11′
Width over all	4′ 10″
Height over all	5′ 7″
Height from foundation to top of platens	2′ 5″
Distance from center line of driving shaft to center line of measuring belt	2′ 9½″
Height to center line of driving shaft from bottom of sills	0′ 23½″
Net weight, including 20′ off-bearing belt	6,975 lbs.

Direct-connected motor drive to order.

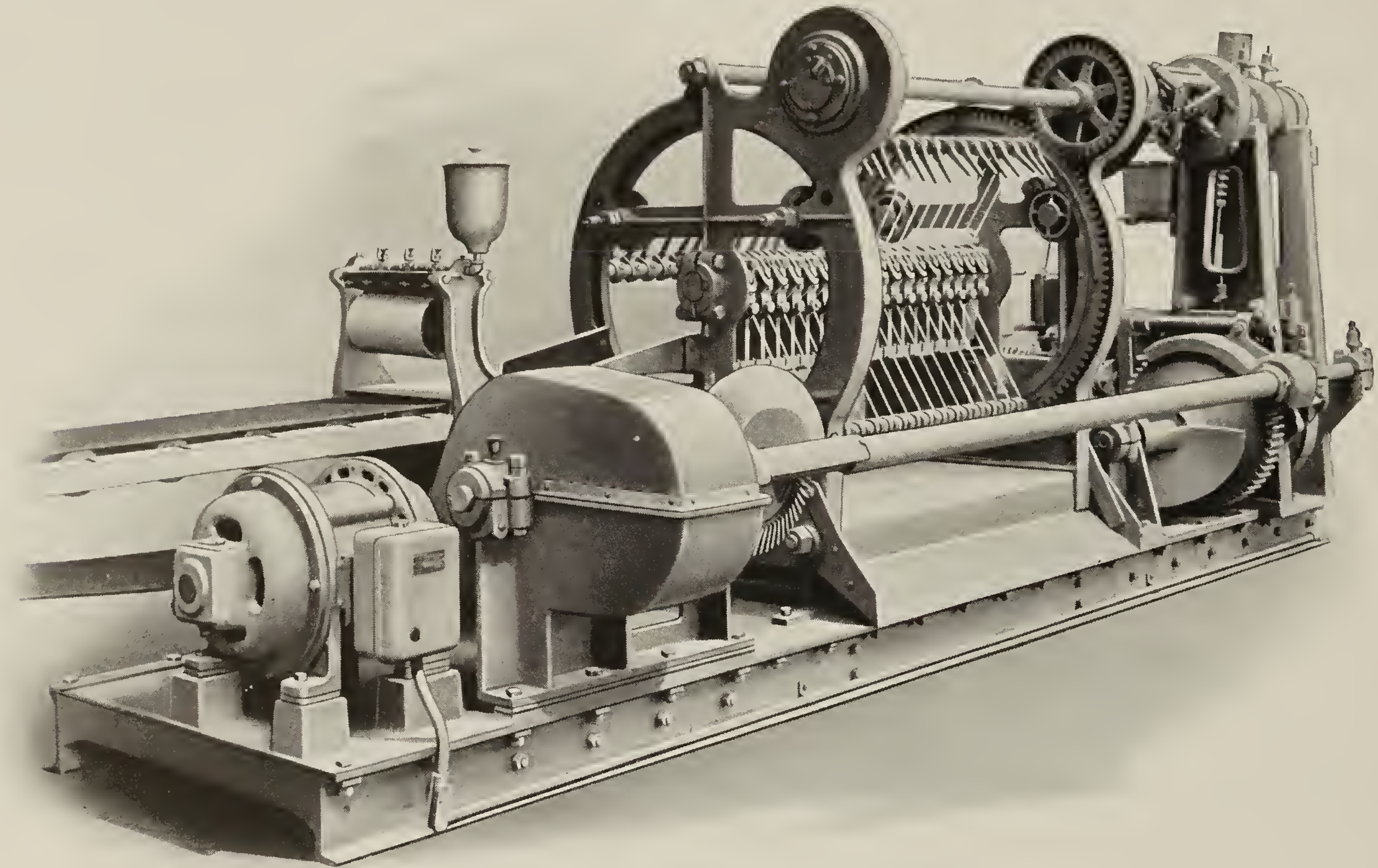
No. 498-B AUTOMATIC BRICK CUTTER

Maximum capacity 15,000 brick per hour. Maximum size of ware with standard platens 5 x 10 in cross-section. Maximum distance center to center of end wires 62½″. Will cut 24 bricks 2½″ thick or the equivalent in other thicknesses.

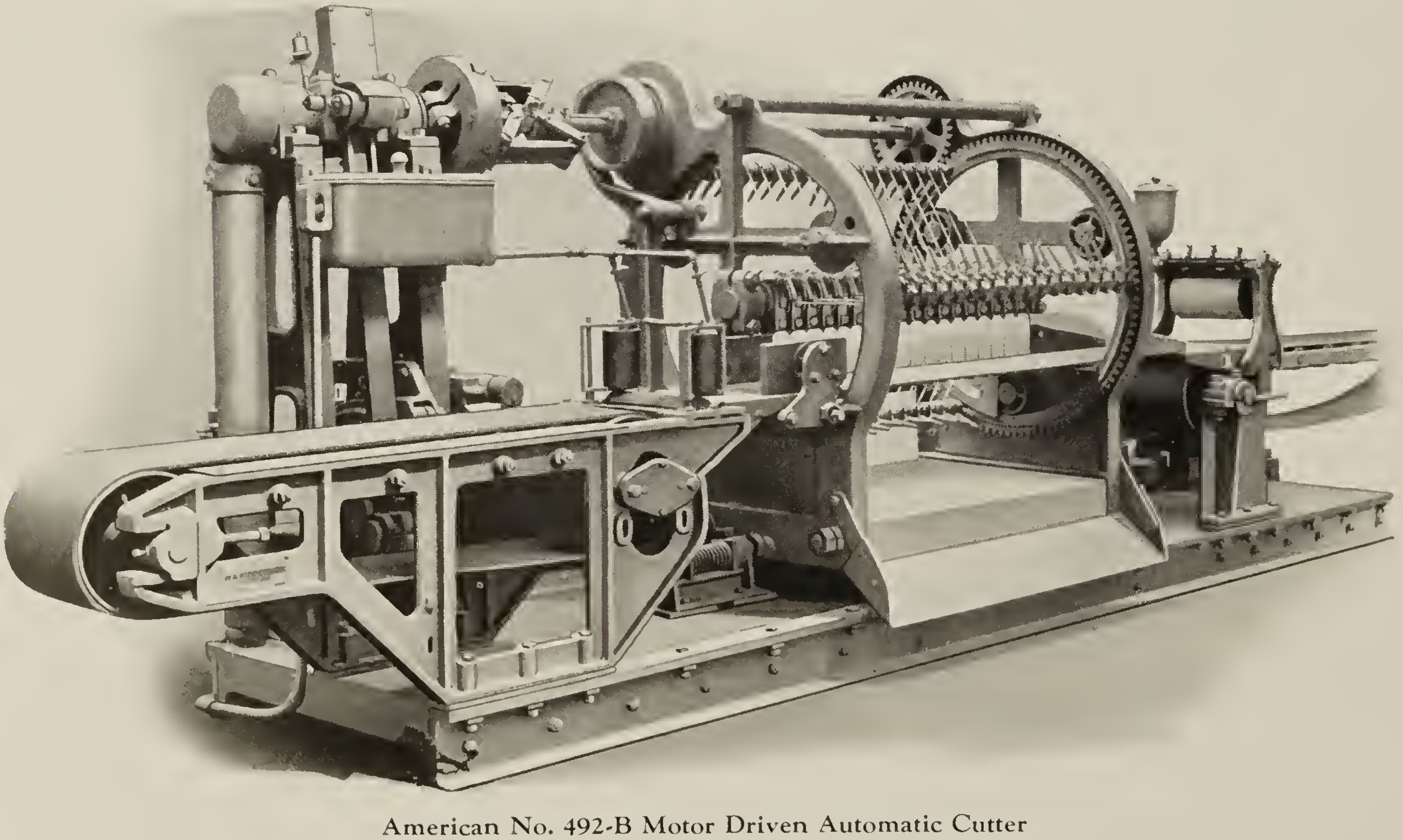
DIMENSIONS

Driving Pulley	30″ x 8″
Speed	80-90 R.P.M.
Length over all, including 20′ off-bearing belt	34′ 10″
Length of sills	13′ 4″
Width over all	5′ 0″
Height over all	5′ 9″
Height top of foundation to top of platens	2′ 7″
Distance center line of driving shaft to center line of measuring belt	2′ 9½″
Height top of foundation to center of drive shaft	0′ 25½″
Net Weight, including 20′ off-bearing belt	7,500 lbs.

Direct-connected motor drive to order.

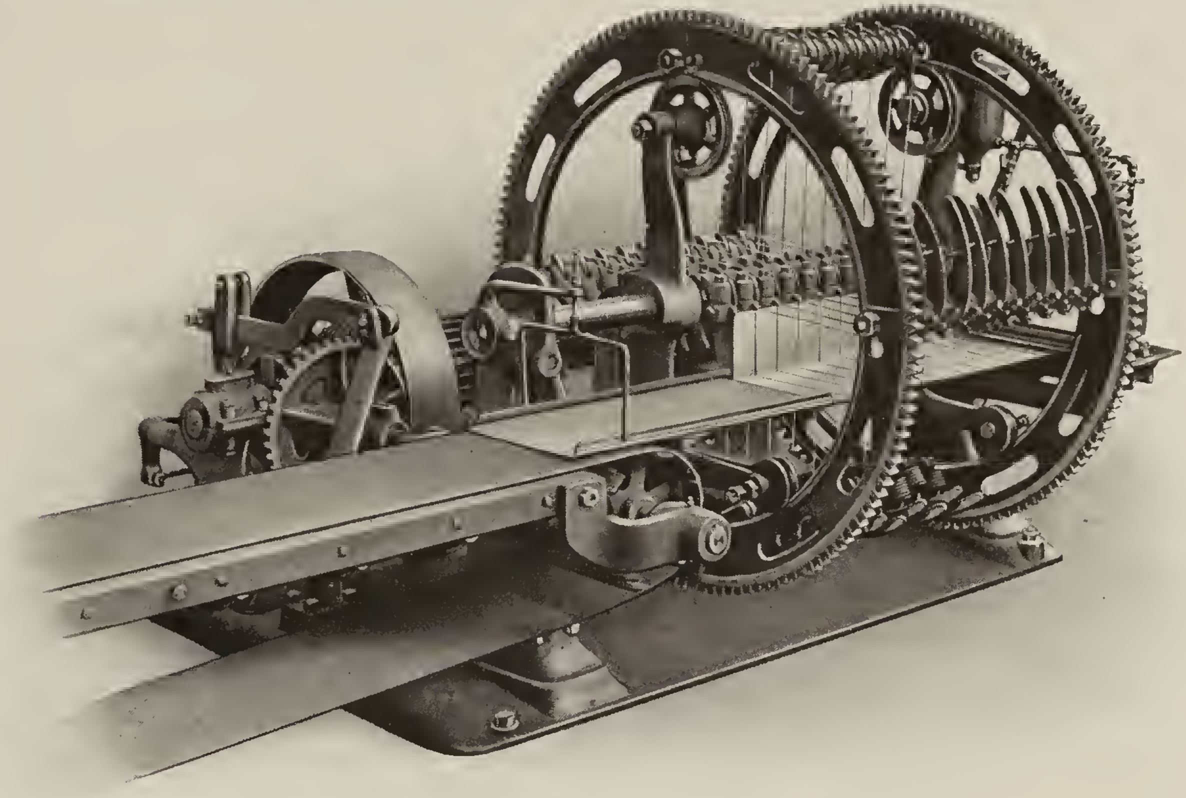


American No. 492 Motor Driven Automatic Cutter



American No. 492-B Motor Driven Automatic Cutter

American No. 158 Semi-Automatic Cutter



American No. 158 Semi-Automatic Cutter

THIS machine is designed for cutting either side- or end-cut brick as well as hollow brick or hollow block, by arranging the proper platens. There are two operating levers. One lever operates the pin clutch attached to the driving pulley. This drives the shaft with the two long pinions which revolves the cutting reel. After each revolution of the shaft, which causes one set of wires to pass through the column of clay, the clutch is automatically disengaged and the cutting reel stops. The second lever permits the operator to assist the bar of clay to move the carriage in correct register with the traveling bar of clay and also to return the carriage to its original position after the cut has been made. These levers are placed at the die end of the machine in order that the operator may watch the bar of clay and its proper lubrication. The off-bearing table is driven by a pair of bevel gears. Maximum width of column of clay, 13″. Maximum height of column 5″. Maximum distance between end wires, 24.5″.

SPECIFICATIONS

Base

The base of the machine is a one-piece casting carrying the shaft bearings, the pedestals supporting the reel carriage and the off-bearing table.

Shafts

The driving shaft is steel, 2¼″ diameter. The steel platen shaft is 2¼″ diameter. The steel wire bar shaft is 1½″ diameter.

Bearings

This cutter is fitted with babbitted bearings.

Off-Bearing Table

The standard off-bearing table is 10′ long, furnished with a belt 12″ wide.

Number of Brick

This cutter will cut 9 brick 2.5″ thick or an equivalent in other sizes. It has four sets of cutting wires.

Capacity

The capacity of this cutter is 3,500 to 5,000 brick per hour, the capacity is governed by the nature and condition of the clay and by management.

Driving Pulley

This cutter is equipped with a pin-clutch driving pulley, 24″ diameter, 4″ face.

Speed

Speed of driving pulley, 25 R.P.M.

Power

Power required to drive cutter and off-bearing table is 2 H. P.

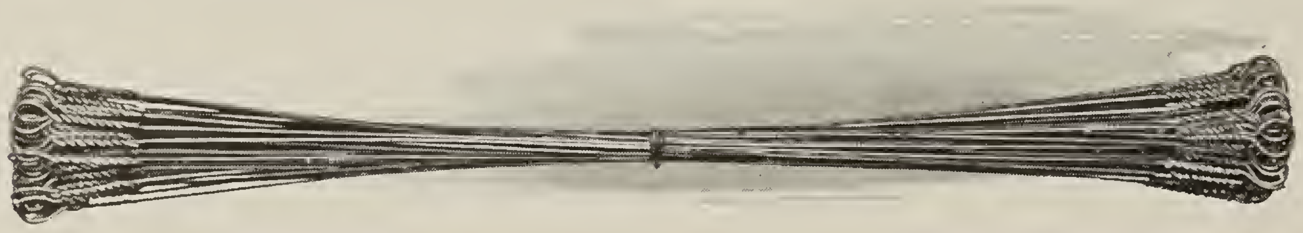
Weight

The weight of this cutter with standard 10′ off-bearing table is 2,865 pounds.

DIMENSIONS

Length over all, including 10′ off-bearing table	15′ 6″
Height over all	4′ 2″
Width over all	5′ 2″
Height from floor to platens	21″

American Cutting Wires



QUALITY IS IMPORTANT

We have made a study of the cutting-wire problem from all sides. We find the vital points are—quality of wire, method of making the loop and care of wires after made.

We have tested all wires of all manufacturers and have adopted the best brands of imported and domestic wire.

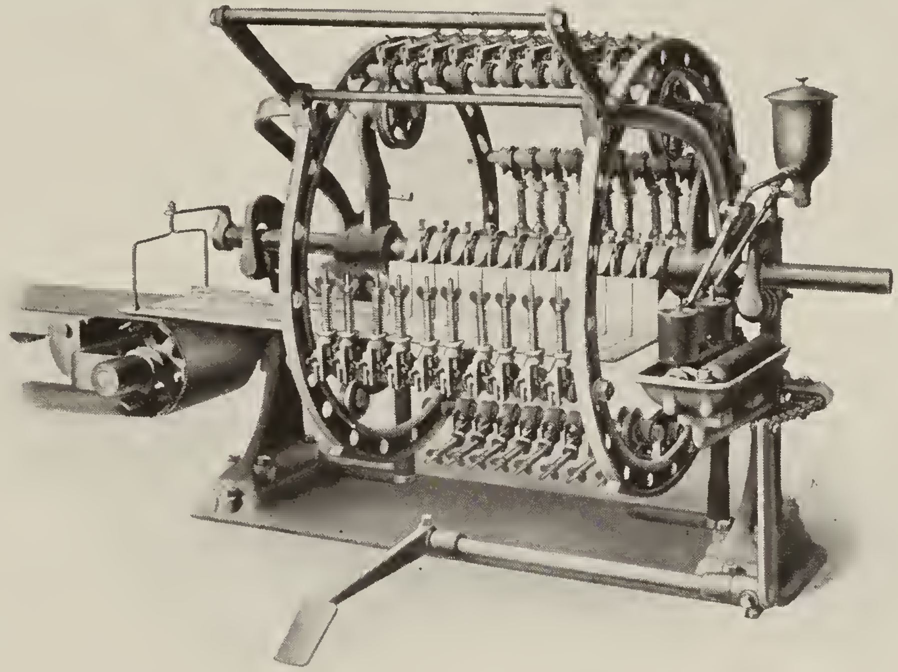
We have invented machinery for measuring off the exact amount of wire from the reel to insure each cutting wire being the exact length. The machine straightens the wire which has been curved by coiling in rolls. It forms the loop—all loops being exactly alike. It twists the wire and solders it fast.

Our wire is automatically straightened and is therefore much easier to place in position on rapidly-moving cutting machines than the old fashioned wires, which are in the form of a semi-circle.

Tests made indicate that our double twist with soldered loops is the best possible way to make cutting wires, as wires made in this way stand a much higher test and show that the loop will hold more than the tensile strength of the wire. With this method of manufacturing, our double-twist, single-loop wires are better than a double-loop wire.

Our wires are put up in straight, clean bundles of 250 wires each and are treated with a preparation to prevent rust. This preparation will not eat into the wires and destroy them, no matter how long the wires are stored away. The long life of our wires led us to perfect this preserving composition. This care of preparation and packing insures better preservation, and full efficiency from every wire, because all crooking or buckling of wires is obviated. In furnishing these wires for cutters not of our own manufacture, it is best to have a sample sent in with the order, so we can duplicate the length of the wire and also make the proper size loop.

American No. 62 Hand-Power Rotary Cutter



American No. 62 Hand-Power Rotary Cutter

THIS Cutting Table has been designed to meet the wants of brick plants of medium capacity requiring a perfect brick. It is a self-contained machine, designed with a substantial base. The uprights, which are securely bolted to each end of the base, are planed perfectly smooth on the bottom, and the base is planed smooth where the uprights are bolted, so that the joints are absolutely perfect and rigid. The top of the upright is made in the shape of a goose neck. A substantial roller having an anti-friction pin bearing is secured in the top of the upright.

On these rollers a steel shaft, 2.25″ diameter, is supported and the reel to which the cutting wires are attached is supported on this steel shaft. The shaft travels back and forth on the rollers, giving the necessary motion required in order to secure a perfect cut. The table moves forward with the column of clay while the wires are passing through, and after the cut is made it is returned to the proper position for the next cut by a foot lever which is located convenient to the operator.

The platens are supported on the steel shaft moving with the reel. The reel is constructed with a substantial cast iron ring at each end. The inside of the ring is turned off smooth in a "V" shape and it is supported on three "V"-shaped grooved rollers. This permits the reel to revolve readily. The upper roller is mounted on an eccentric pin, which affords a means of taking up the wear. The outside of the cast rings are provided with teeth which work in connection with the dogs or pawls, similar to a ratchet. These pawls are operated by a horizontal bar. As the table stands in position for cutting the dogs engage the teeth on the ring and a downward motion of the horizontal bar revolves the reel, forcing the wires through the column of clay. After the cut is made the horizontal bar is lifted until the dogs drop into place on the next set of teeth on the ring.

It does not require skilled labor to operate this cutting table, as the operation is very simple and readily understood. The cutting reel is fitted with four sets of wires secured with improved wire fasteners. Ample facilities are provided for oiling the platens and bearings on the machine.

When so ordered the No. 62 Cutter can be arranged for cutting Roman size brick as well as standard size brick. The standard off-bearing belt furnished with the cutter is 10′ long and is driven with a pulley 12″ diameter, 6″ face. Speed, 10 R.P.M.

The construction of the table throughout is strictly first class. Each and every cutter is erected complete and thoroughly inspected before shipment. The No. 62 Cutter may be used for cutting end-cut brick as well as side-cut brick and can also be used for cutting hollow brick or hollow blocks when fitted with the proper platens.

Capacity, 2,500 to 4,000 brick per hour, depending somewhat upon the ability of the operator. Table cuts 9 brick 2.5″ thick; maximum distance between end wires, 23″; maximum width of column, 13.25″; maximum height of column, 5″.

SPECIFICATIONS

Frame

The base is one-piece casting. Side reels are cast and machine carried on heavy machined side frames bolted to base.

Shaft

The shaft is steel and carries the reel. It is 2¼″ in diameter.

Off-Bearing Belt

This cutter is furnished with standard length off-bearing belt 10′ long. The width of this belt is 12″

Driving Pulley

The diameter of the driving pulley for the off-bearing table is 12″. Face, 6″. Speed, 10 R.P.M. Diameter of spider pulley, 9″.

Length of Cut

This table will cut 9 standard 2½″ brick at one movement. Maximum distance between end wires, 23″. Maximum length of brick, 13¼″. Maximum width of brick, 5″. There are four sets of cutting wires.

Weight

Weight, 1,800 pounds, including 10′ off-bearing belt.

DIMENSIONS

Length over all, including 10′ off-bearing belt	15′ 10″
Width over all	4′ 8″
Height over all	5′ 2″
Height from floor to top of platens	1′ 9″
Height from floor to center of driving pulley on off-bearing belt	1′ 4″

A BEAUTIFUL EFFECT IN BRICKWORK

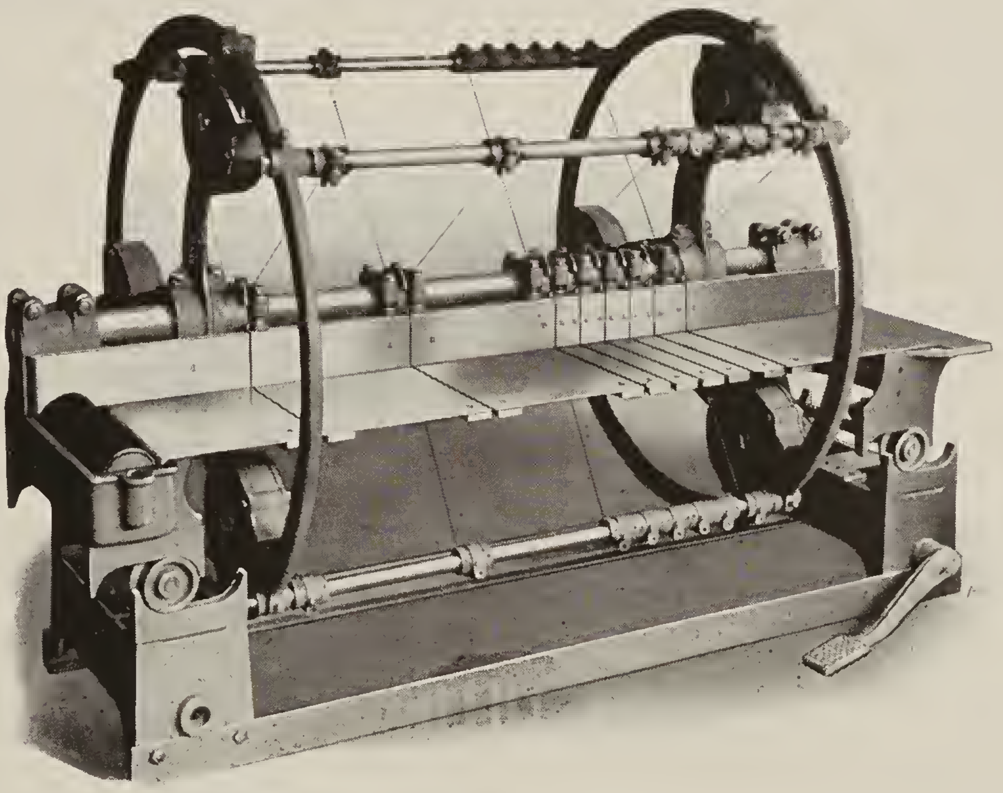
Brick is a most adaptable material for producing unusual masonry effects at reasonable cost. There are artistic bonds to meet any architectural requirement.

American No. 407-A Hand-Power Hollow Ware Cutter

THIS cutter was designed for meeting the needs of a medium capacity plant where an automatic cutter is not necessary. The substantial end castings mounted on heavy angles provide a rigid base while the upper part of the end castings furnish trackway to provide the necessary end travel. A part of the cutter frame is the oil reservoir in which the felt-covered roller runs to provide lubrication for the bar of clay. The cutting reel is carried on rollers mounted on substantial spiders attached to the steel shaft, which also carries the central set of wire fasteners. There are four sets of cutting wires and the cut is made downward and shearing, the wires passing but once through the column of clay at each cut. The cutting frame travels with the bar of clay while the cut is being made and is returned to its original position after the cut, by means of the foot pedal. The wire fasteners are of our late, quick detachable type. The whole cutter is substantially built and will be found accurate, easily operated and satisfactory.

This cutter is designed to cut hollow building tile, fire proofing and other similar hollow ware and will cut up to and including 13½ x 13½ in cross-section green size. For small ware four sets of wires are used, while for larger ware two sets are used.

The standard cutter is furnished without an off-bearing belt, but when a belt is desired any length can be furnished to meet requirements.



American No. 407-A Hand-Power Hollow Ware Cutter

SPECIFICATIONS

Will cut up to 13½ x 13½ in cross-section and up to 40½″ in length or multiples thereof.

Length over all for hand delivery, including travel endways	7′
Length over all for belt delivery, including travel	8′
Length of top for hand delivery	6′ 2″
Length of top for belt delivery	7′ 2″
Width over all	4′ 2″
Height floor to top of platen	22¼″
Height over all	4′ 1½″
Weight	1,100 lbs.

American No. 8 Down-Cut Board-Delivery Cutter

This cutting table is designed for cutting side-brick, face brick, fire clay slabs, fire brick, etc. Using standard pallets 36″ x 10″ x ⅞″. Can use Haking Pallets 6⅞″ high over all, distance between risers 31¼″.

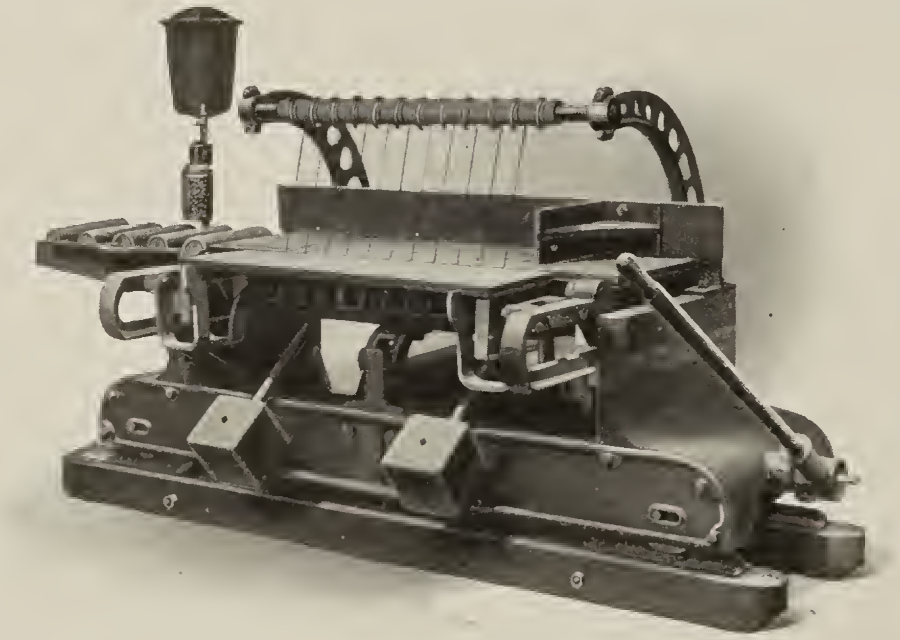
RATED CAPACITY PER HOUR

2,000 to 3,000 standard size brick per hour. Capacity depends upon the ability of the operator.

SPECIFICATIONS

Arrangement of Wire

The wires are suspended on a movable cutting frame fitted with latest type wire tighteners, and the push board is stationary. By this means the slab of clay is cut into brick or blocks without any waste.



Operation

The operator stands at the end of the table farthest from the machine, and operates the lever by which the wires are drawn through the bar of clay, insuring a clean cut and one smooth edge and end on each brick. The pallet or board is drawn under the brick while being cut. The cutting is done at the moment when the traveling column of clay abuts against a stopping plate near the operator, which starts the table to move outward with the column of clay. After the cut is made the operator pulls the table toward him; this enables the wires to clear the end of the traveling column of clay. The back stroke of the lever replaces the wires in their original position and deposits the board with brick at the front of the table, so that they can be removed by hand.

Points of Superiority

This table is made entirely of iron and steel, and all the working parts move on compound anti-friction rollers. The push board is so constructed that the back of it is clear, which prevents clay sticking to the wires and clogging. The end abutment is fastened to the push board. In addition to other points of merit, it also possesses all the advantages of the other board delivery tables. It is a very popular cutter and has been purchased for use with a large variety of machines.

Hand

It can be built for either right- or left-hand delivery. The cut shows a left-hand delivery.

Weight

Weight of standard cutter, 1,300 pounds.

DIMENSIONS

Length	7′ 3″
Width	4′ 3″
Height	4′ 2″
Standard size of pallets	36″ x 10″ x ⅞″
Size of sills	3¾″ x 4½″ x 6′ 6″

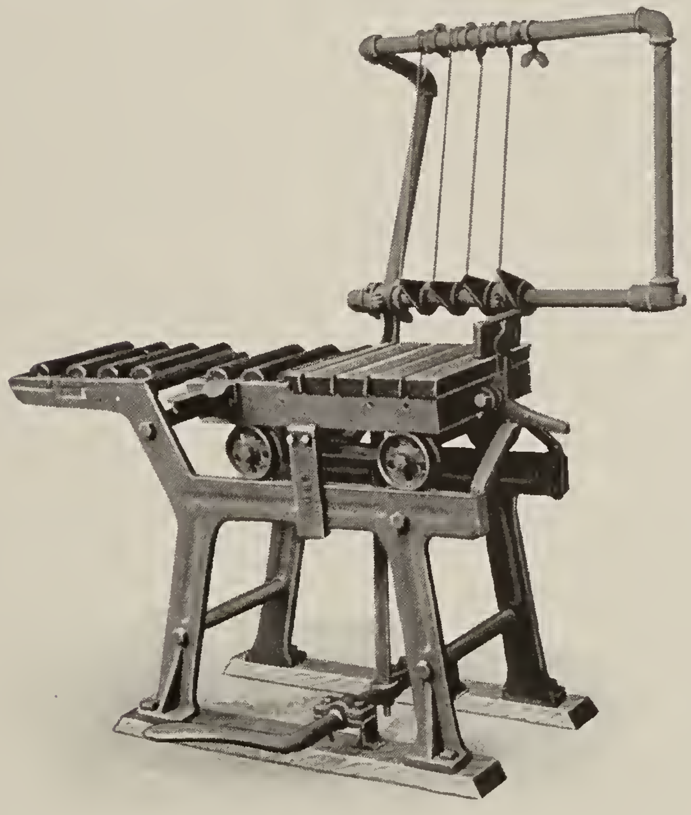
American No. 6 Cutter

THE American No. 6 Cutting Table is adapted for cutting side-cut brick, though it can be arranged for end-cut and double wedge if desired. It is built with an iron frame, the top of which forms tracks on which the cutting frame moves easily on grooved rollers. The abutment plate is hinged, and after the cut is made the table is moved back, which releases the abutment plate, allowing it to fall back out of the way of removing the brick, which is done before the cutting frame is raised.

RATED CAPACITY PER HOUR

Building Brick, 1,500 to 2,000 per hour.

Capacity is governed by the ability of the operator. Standard machine will cut side-cut brick up to 5″ x 9½″; maximum length of cut, 10″. Can be built to cut Roman brick 13½″ long.



American No. 6 Cutter

SPECIFICATIONS

Frame

The carriage travels on two cast iron side frames, which act as tracks for rollers, being held together by stretcher bolts. These frames also carry the oil pan and rollers for supporting the column of clay.

Sills

The cutter is mounted on suitable wooden sills, making the cutter self-contained and easy to handle in case the cutter is moved in and out of position.

Weight

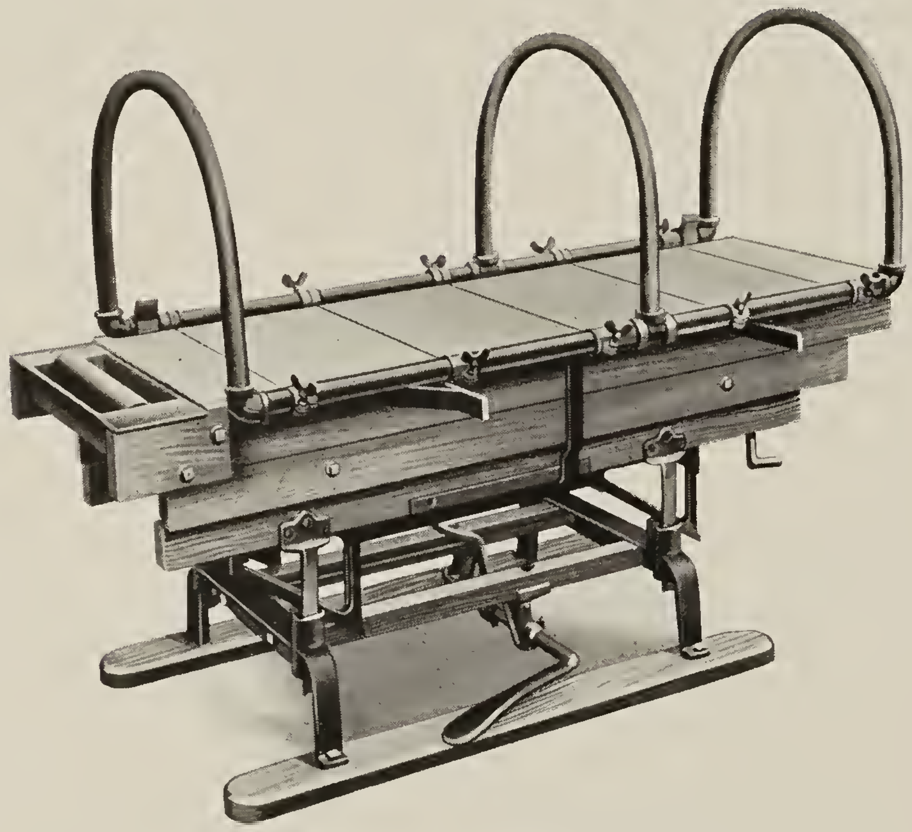
Standard cutter, 250 pounds.

Special for Roman brick, 350 pounds.

DIMENSIONS

Length over all	4′ 4″
Height over all	4′ 2″
Width over all	2′ 10″
Height from floor to platens	2′ 4″

American No. 1 Combination Cutter



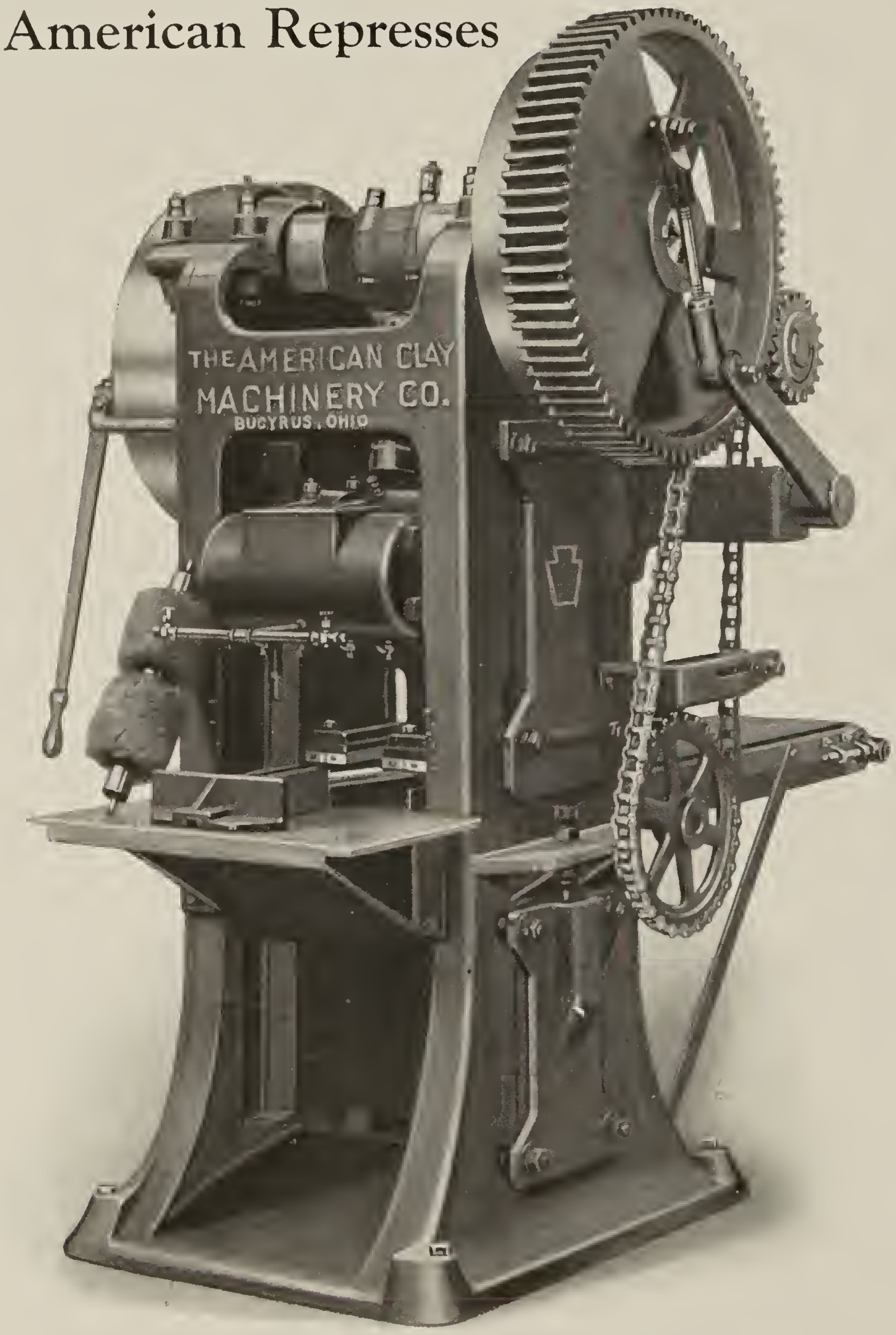
American No. 1 Combination Cutter

THE No. 1 Combination Table is adapted for cutting drain tile, hollow building blocks, fire-proofing, terra cotta, lumber, etc. When brick, hollow ware or small tile are to be cut, suitable straight rollers are furnished, while for drain tile grooved rollers are supplied, with depressions in them for one, two or three streams of tile. All sizes of tile up to and including 5 inches in diameter are cut and handled on the rollers; from 6 inches to 8 inches in diameter are cut and handled in copper-lined or wooden troughs, which are made to fit the table. For large hollow blocks an additional cutting frame of suitable size can be attached in place of the small one usually supplied. A screw adjustment raises and lowers the table to any desired height. Floor space, 2′ 2″ x 6′.

WARCO
BUCYRUS
OHIO

Repress Department

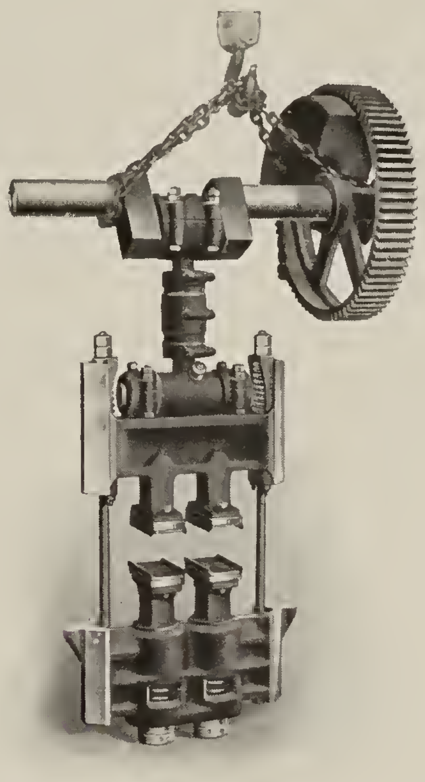
American Represses



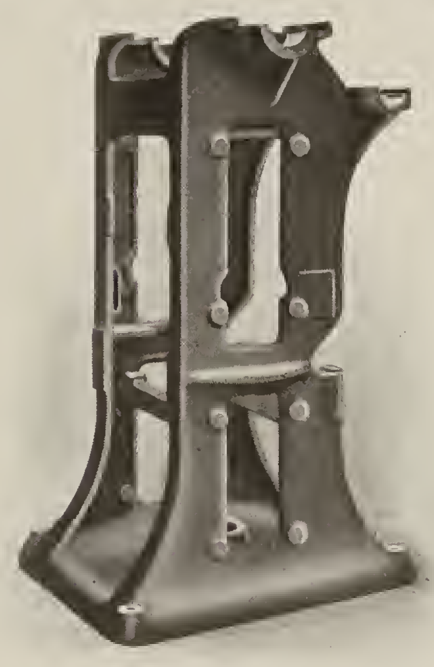
American No. 292 Repress

THE construction of the press is high class in every detail. All wearing surfaces are large and parts are easily accessible for adjustment or renewal. Ample provision is made for lubrication and wearing parts are well protected from dirt. The most simple mechanical movements are used and the machine is built with the least number of parts possible. All working parts are above the point where the pressing occurs, except the lower cross-head and bottom plungers.

The bricks are retained under pressure while moving in the mold box, allowing more time for the rearrangement of the particles constituting the structure of the brick. The bottom plungers are each provided with a powerful spring to regulate the pressure, and each brick is pressed independent of the other.



Working Parts of the American No. 292 Repress, Located Inside the Main Frame



Main Frame of the American No. 292 Repress, Cast in One Piece

RATED CAPACITY PER HOUR

Paving Block or Brick, 2,000 to 3,000 per hour, using a double mold box.

The capacity is governed by speed at which the machine is operated, size and kind of ware being repressed, and by the ability of the operators to handle the ware.

SPECIFICATIONS

Main Frame

The main frame of this machine is a heavy one-piece casting carrying the shaft bearings on top, supporting the mold box in the center, and having a heavy base to receive the pressure strains.

Shafts

The crank shaft is hammered steel, turned down to 4½″ diameter. The crank stroke is 8″. The driving shaft is 3″ diameter, the charger shaft is 2″ diameter, and the driving shaft on the off-bearing belt is 1½″ diameter.

Bearings

The crank shaft bearings are 12″ long. The driving shaft bearings are 9″ long. These are ring oiling bearings and well babbitted with the best metal for the service required.

Adjustable "V"-shaped guides for the cross-heads. These guides are bolted to the outside of the main frame. They can be readily removed or adjusted to take up wear

Gears

The gears are cast American gear metal. They are 1¼″ pitch and 5″ face. Master gear on crank shaft is 30⅝″ diameter and the driving pinion is 7½″ diameter. Ratio of gears, 4 to 1. Gears are covered with a sheet steel guard. Master gear is cast with a counter-weight to permit stopping the press on the up stroke.

Connecting Rod

A single connecting rod is used between the crank shaft and the upper cross-head. This rod is fitted with a cast iron sleeve, having a right and left-hand thread for adjusting the length of the rod and regulating the thickness of the brick to be pressed. When properly adjusted for thickness of the brick the sleeve is locked and cannot move to displace the adjustment while operating.

Mold Box

The mold box is cast iron with hard steel renewable liners. Mold box is 6¾″ deep and will press a block 5½″ thick; 11″ x 5″ is the largest block that can be pressed in a standard double mold box, and 11″ x 13″ is the largest single block that can be pressed.

Charger

The charger is operated from a crank pin on the master gear. This eliminates lost motion and insures the correct placing of the brick in the mold box. The motion is easy and permits of rapid work without damage to the finished product. Connecting rod on the charger is fitted with a right and left-hand thread for proper adjustment, according to the length of the brick. The illustration of the repress shows the "T" head charger which is always furnished with the standard machine. The old-style flat charger, running in under a flat feeding table, can be furnished with this repress when so specified in the order.

Oil Tank

A cast iron oil tank is furnished with the repress and provided with pipes and valves to deliver oil to the feeding table and oil roller. This tank is hung in brackets on the main frame and may be easily lifted out at any time.

Off-Bearing Table

The machine is furnished with a standard steel frame off-bearing table 49½″ long, having an endless leather off-bearing belt 14″ wide. The off-bearing belt is driven with a steel roller chain running on cut cast iron sprocket wheels, 1″ pitch, ratio 2½ to 1.

Driving Pulley

The machine is furnished with a standard Bucyrus friction-clutch driving pulley, 30″ diameter and 6¾″ face.

Speed

Speed of driving pulley, 100 R.P.M. to 125 R.P.M., according to capacity required and kind of ware being pressed.

Power

Power required to operate this repress will vary from 5 H.P. to 7 H.P., according to capacity, kind of ware manufactured, and character of material used.

Weight

7,285 pounds.

DIMENSIONS

Height over all	7′	4″
Width over all	5′	7″
Length over all, including Off-Bearing Table	7′	10½″
Distance from center of Machine to center of Driving Pulley	2′	1¾″
Height from floor to top of Mold Box	2′	8″
Distance from center of Machine to outer end of Feeding Table	2′	6⅝″
Distance from center of Machine to outer end of Off-Bearing Table	5′	4″
Height from floor to center of Driving Pulley	5′	4¾″
Distance from center of Machine to center of Driving Shaft	1′	6″

American No. 363 Repress

THIS machine is designed for repressing large and medium fire brick shapes. The construction is high class in every detail. All wearing surfaces are large and parts are easily accessible for adjustment or renewal. Ample provision is made for lubrication and wearing parts are well protected from dirt. The most simple mechanical movements are used and the machine is built with the least number of parts possible. All working parts are above the point where the pressing occurs, except the lower cross-head and bottom plungers.

The bricks are retained under pressure while moving in the mold box, allowing more time for the re-arrangement of the particles constituting the structure of the brick. The bottom plunger is provided with a powerful spring to regulate the pressure.

RATED CAPACITY PER HOUR

Standard 13½″ Fire Brick, 1,200 to 1,800 per hour, using double mold box.

The capacity is governed by speed at which the machine is operated, size and kind of ware being repressed, and by the ability of the operators to handle the ware.

SPECIFICATIONS

Main Frame

The main frame of this machine is built up of two heavy side frame castings, carrying the shaft bearings on top, supporting the mold box in the middle and securely fastened at the bottom to a heavy one-piece base, which receives the pressure. Two heavy stretchers hold the side frames together at the top. All joints are machined, accurately fitted and securely bolted together, making a most rigid construction of ample weight and strength to take all pressure strains and absorb vibrations.

Shafts

The crank shaft is forged and turned to 6″ diameter, and the crank stroke is 12″. The driving shaft is 3½″ diameter, the charger shaft is 2″ diameter, and the driving shaft on the off-bearing belt is 1½″ diameter.

Bearings

The crank shaft bearings are 16″ long. The driving shaft bearings are 12″ long. These are ring oiling bearings and well babbitted with the best metal for the service required.

Gears

The gears are semi-steel. They are 2″ pitch and 8″ face. Master gear on crank shaft is 37½″ diameter and the driving pinion is 9½″ diameter. Ratio of gears, 4 to 1. Gears are covered with a sheet steel guard. Master gear is cast with a counter-weight to permit stopping the press on the up stroke.

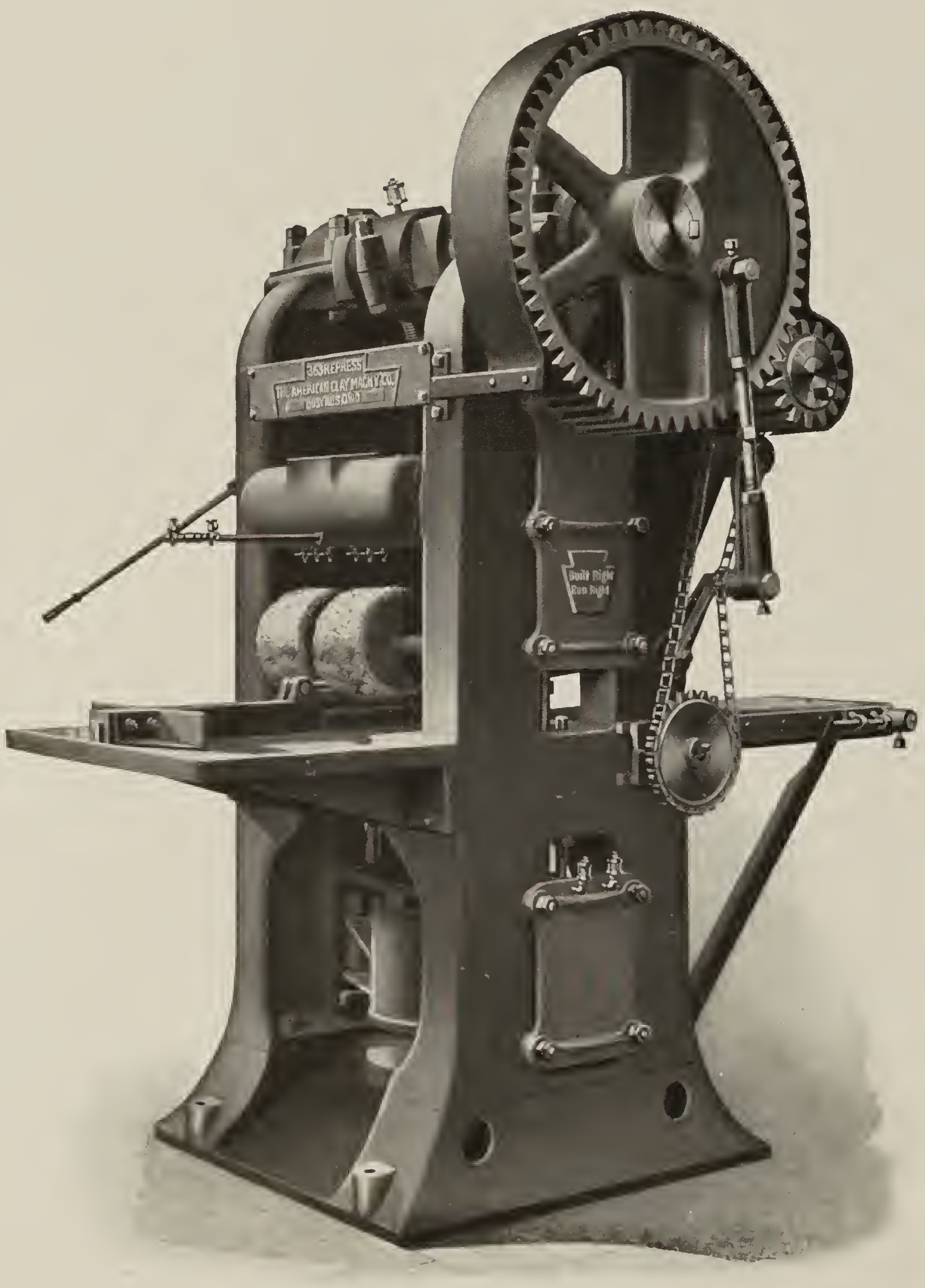
Connecting Rod

A single connecting rod is used between the crank shaft and the upper cross-head. This rod is fitted with a sleeve, having a right and left-hand thread for adjusting the length of the rod and regulating the thickness of the brick. When properly adjusted for thickness of the brick the sleeve is locked and cannot move to disturb the adjustment while operating.

Mold Box

The mold box is cast iron with chilled and ground surfaces which may be reground when worn. Mold box is 9″ deep and will press a block 7″ thick; 18″ x 7½″ is the largest block that can be pressed in a standard double mold box and 18″ x 18″ is the largest single block that can be pressed.

An adapter to take on the standard mold box of our No. 292 Repress and suitable upper and lower pressure feet can be furnished with this machine. The No. 292 mold box is 6¾″ deep and will repress a block 5½″ thick; 11″ x 5″ is the largest block that can be pressed in double mold box, and 11″ x 13″ is the largest single block that can be pressed.



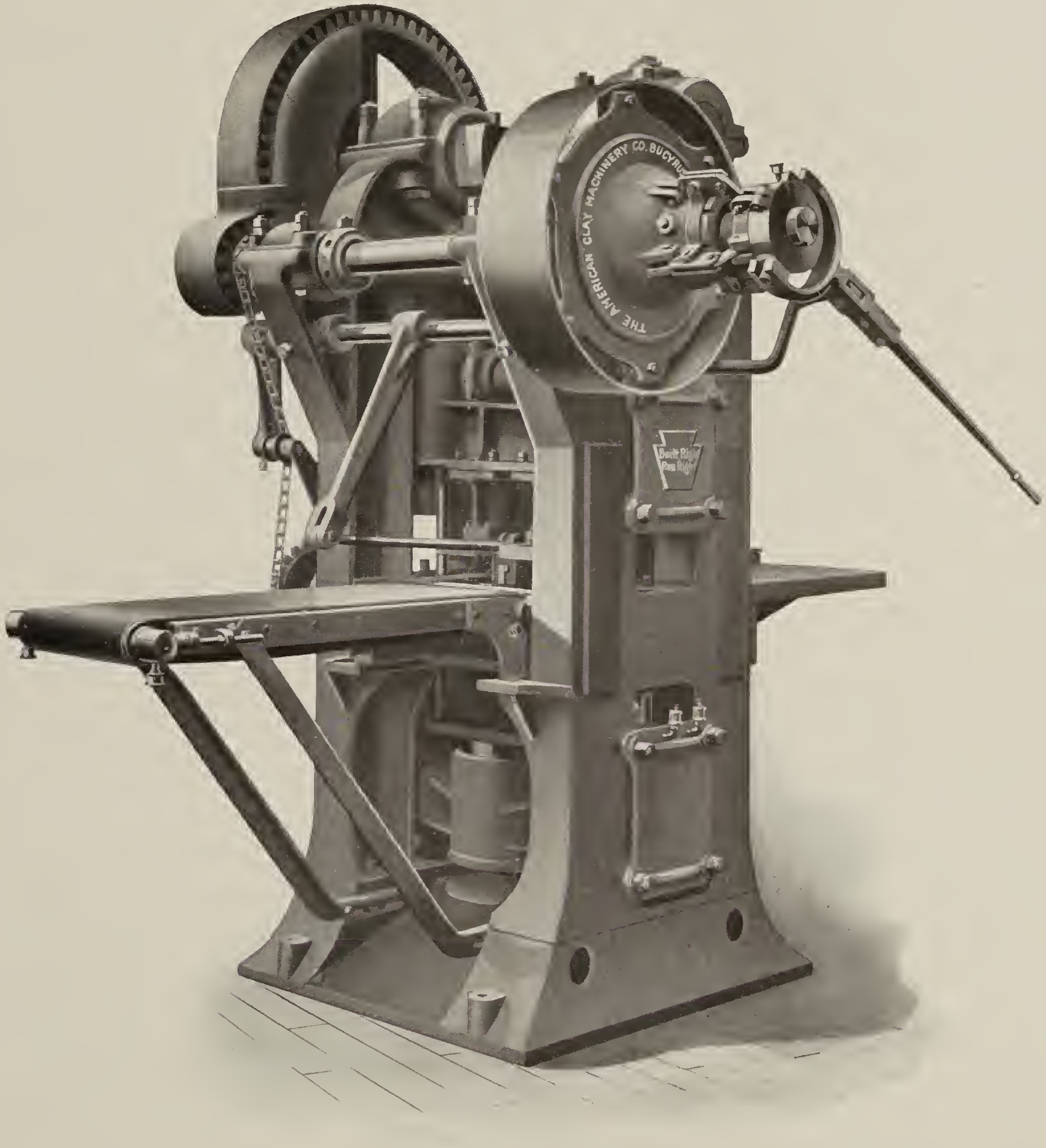
American No. 363 Repress—Front View

Charger

The charger is operated from a crank pin on the master gear. This eliminates lost motion and insures the correct placing of the brick in the mold box. The motion is easy and permits of rapid work without damage to the finished product. Connecting rod on the charger is fitted with a right- and left-hand thread for proper adjustment according to the length of the brick.

Oil Tank

A cast iron oil tank is furnished with the repress and provided with pipes and valves to deliver oil to the feeding table and oil roller. This tank is hung in the main frame and may be easily lifted out at any time.



American No. 363 Repress—Rear View

Off-Bearing Table

The machine is furnished with a standard steel frame off-bearing table 48″ long, having an endless leather off-bearing belt 18″ wide. The off-bearing belt is driven with a chain running on sprocket wheels, 1-inch pitch.

Driving Pulley

The machine is furnished with a standard Bucyrus friction-clutch driving pulley, 48″ diameter, 8″ face.

Motor Drive

When required this press can be built for motor drive, using a direct-connected motor. Either alternating or direct current. Slow-speed motor should be used.

Speed

Speed of driving pulley, 50 R.P.M. to 75 R.P.M., according to capacity required and kind of ware being pressed.

Power

Power required to operate this repress will vary from 7 H.P. to 15 H.P., according to capacity, kind of ware manufactured, and character of material used.

Weight

14,000 pounds.

DIMENSIONS

Height over all	9′	5½″
Width over all	7′	9¾″
Length over all, including Off-Bearing Table	8′	11½″
Distance from center of Machine to center of Driving Pulley		19¾″
Height from floor to top of Mold Box	3′	9″
Distance from center of Machine to outer end of Feeding Table	3′	7″
Distance from center of Machine to outer end of Off-Bearing Table	5′	4″
Height from floor to center of Driving Pulley	6′	9″

American No. 1 and No. 2 Hand-Power Brick Repress

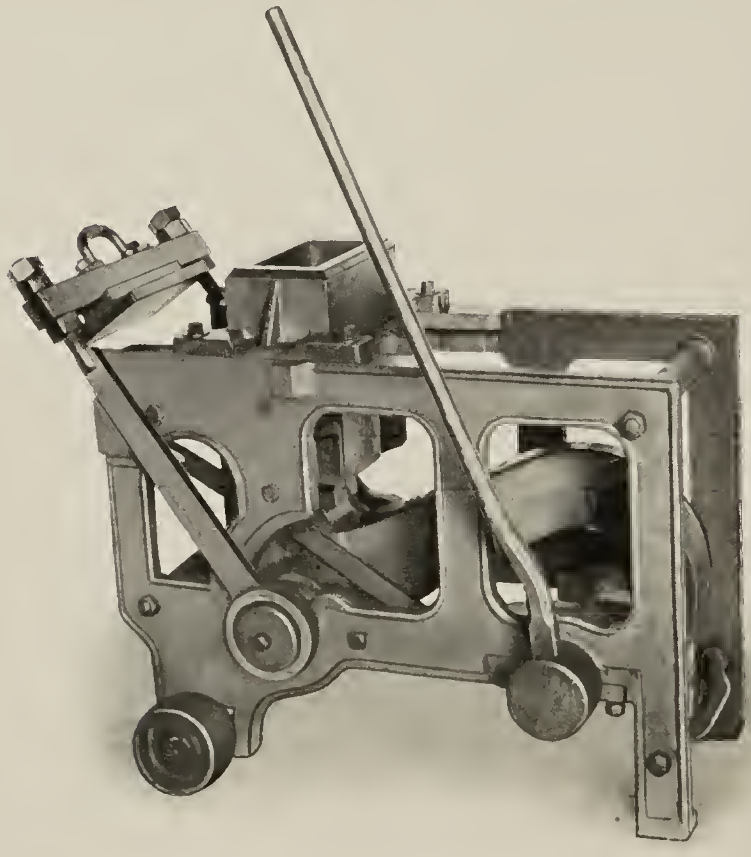
THERE are few factories where this hand-power repress would not be a great convenience. For a few special brick, where they vary in size or shape, it will be found very convenient to press them on the hand-power repress. This machine is compactly built and is extremely simple and strong. It is made portable and can be moved about to different parts of the plant. It is equally well adapted to stiff or soft-mud brick, and is capable of producing a fine grade of brick, compact, perfectly square, of equal thickness, and with edges and corners clearly defined. It is operated with one lever, which serves the double purpose of pressing the brick and ejecting it from the mold.

The No. 1 press has a mold 5″ deep, and the press will handle brick up to 9″ x 9″.

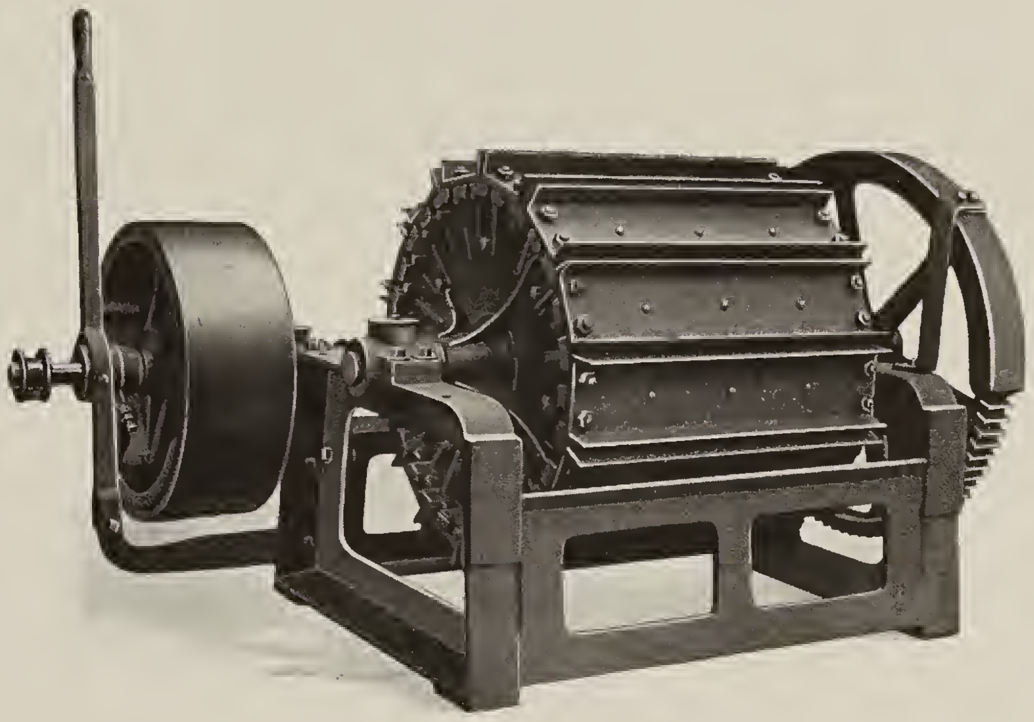
Weight, 900 pounds.

The No. 2 press has a mold box 5″ deep, and will press a block 12¾″ x 12¾″.

Weight, 1,300 pounds.



American No. 122 Paving Brick Rattler



American No. 122 Paving Brick Rattler

WE build a paving brick Rattler according to the national specifications. These Rattlers are of excellent construction and will be found satisfactory in every way. The specifications on which the American Rattler is built were adopted by the National Paving Brick Manufacturers Association and these specifications are now universally recognized as standard.

Brick Paved Roads and Streets

Section of the Lincoln Highway at Bucyrus, O.

BUCYRUS is fortunate in being on this most noted highway and has taken a leading part in its improvement through this part of Ohio. The accompanying picture shows a section of the Lincoln Highway between Bucyrus and Upper Sandusky. It is vertical fiber brick, 18 feet wide with a five foot berm on either side. The filler is asphalt, the pavement being laid on a concrete base.

Ohio has shown its appreciation of this highway and Mr. Lincoln, in whose honor it was named, by improving a large portion of the Ohio section in the most enduring way. The older sections so constructed are continuing to show evidence of wise decision in material and building. Increasing traffic and increasing loads seem to only add to the proof that the construction is right for high type and heavy traffic roads.

The Clay industry should be particularly interested in and proud of what Ohio has offered the traveling public in its bricked portions of the Lincoln Highway.

Brick is the most lasting paving there is. Properly laid it will serve longer at less cost of upkeep than any type of pavement. Its cost is cheap compared to its life and service. No road or street dollar is so well and profitably invested as when it is invested in Vitrified brick.

WARCO
BUCYRUS
OHIO

Pug Mill Clay Feeder Granulator Department

Pug Mills

IN tempering clay for the manufacture of brick, hollow tile, etc., it is an established fact that losses are reduced and better ware results from using clay that is properly prepared.

Why attempt to accomplish in approximately two minutes what our grandfathers did in twenty-four hours? They used a soak pit, while we first grind the clay, then run it through a pug mill to mix and temper. Grinding the clay enables us to shorten the time required for pugging or soaking and grinding is much better done at this time than ever before, but the final mixing should be just as well done as it was by the older method.

Avoid the use of too small a pug mill. It is not practical to make a pug mill very long, as the tempering shaft must be supported in substantial bearings and these bearings must be kept away from the clay, but there is nothing to prevent increasing the area of the cross-section of the pug mill, thus gaining more time for the material to absorb water and at the same time maintaining production. Absorption of water by the material is hastened by stirring and kneading, which is accomplished by arms or blades radiating from the tempering shaft of the pug mill.

The spacing of pug mill knives is important and up to a certain point the more knives the better. However, when they are spaced too closely together the space between them and near the shaft fills with clay and only the tips of the blades do any useful work, in which case the work is poorly done and the power consumption is high.

A pug mill having two tempering shafts and two sets of knives does excellent work when properly designed.

In order to do good work the knives from one shaft must overlap the knives from the opposite shaft by at least half their length. This arrangement prevents a wall of clay forming between the shafts and separating the material handled by each shaft.

A double-shaft pug mill without this overlap does no better work than one with a single shaft of the same area of cross-section, but a double-shaft pug mill with the knives properly overlapping does so much better work than can be done with a single-shaft pug mill of the same area as to greatly improve the ware and sometimes represents the difference between success and failure.

It has been thoroughly demonstrated that time is necessary for the clay to become evenly and uniformly saturated with water in order to develop maximum plasticity and that great care should be given to the selection of the pug mill.

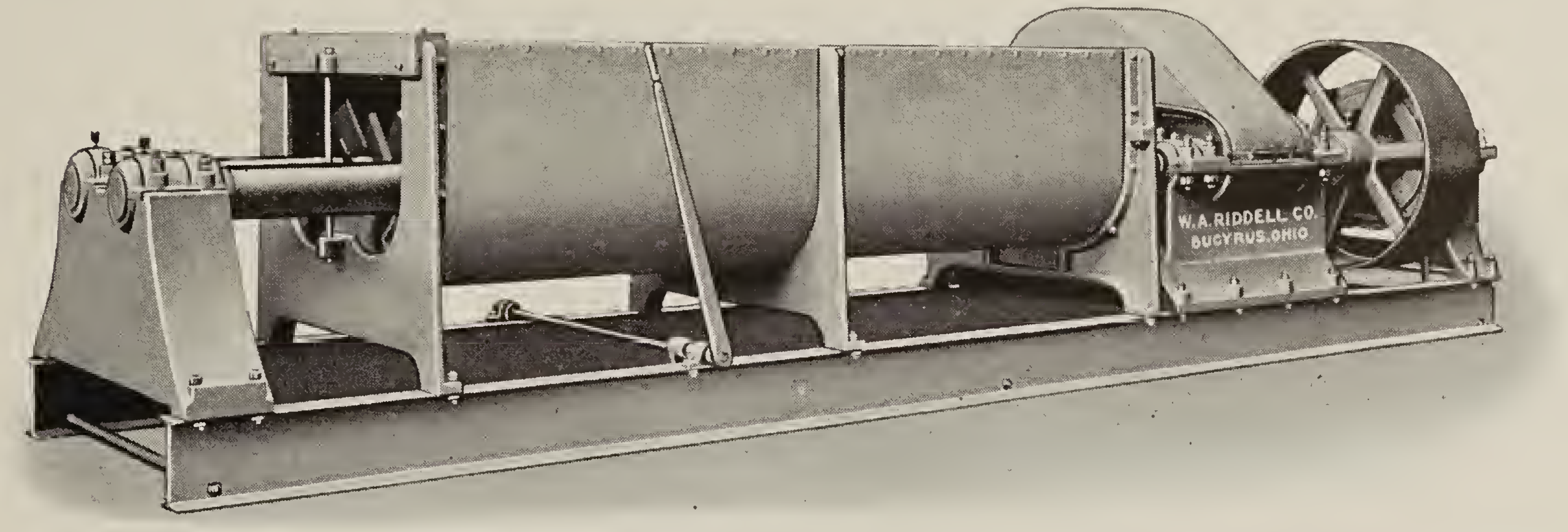
The larger the area and the longer the pug mill, the more time is available for tempering.

For wares that require the best of mixing, or clays that develop plasticity slowly preference should be given a double-shaft pug mill with knives properly overlapping and of sufficient area to obtain production with the clay passing through it slowly.

The double-shaft pug mill under favorable condition may be substituted for wet pans.

American No. 800 12-Ft. Double-Shaft Pug Mill

THIS Pug Mill is intended for use with materials requiring a more thorough mixing than can be obtained from the use of a single-shaft pug mill, such as developing plasticity from lean clays. It is modern in design and construction and has a varying capacity, depending on the time necessary to retain the material in the machine. For building brick with average material it will prepare clay for 10,000 to 15,000 brick per hour.



SPECIFICATIONS

Gear Frame
The gear frame is a one-piece casting closed at the bottom for retaining oil.

Shafts
The tempering shafts are forged steel 8″ in diameter drilled for knife shanks and keys. The pulley shaft is 4″ in diameter.

Bearings
Thrust bearings are marine type such as we have been using on our pug mills for many years and which are giving the best service. All other bearings are ring oiling.

Gears
All gears are made from cast steel with teeth cut from solid metal. Main gear 57¾″ P. diameter x 8″ face; Pinion 11½″ P. diameter x 8″ face, and pug shaft gears 20⅝″ diameter x 8″ face. All gears run in oil.

Shell
The shell is formed from 5/16″ steel plate 12′ long, 38″ deep and 51⅝″ wide.

Knives
There are 94 steel pug knives in this machine. They are adjustable for pitch and knives from opposite shafts overlap about 8⅜″.

Driving Pulley
The friction clutch driving pulley is 48″ in diameter for 16″ belt.

Speed
The speed of driving pulley for average conditions is 100 R.P.M.

Power
Power consumption will vary from 40 to 60 H.P. according to conditions.

Weight
26,200 pounds.

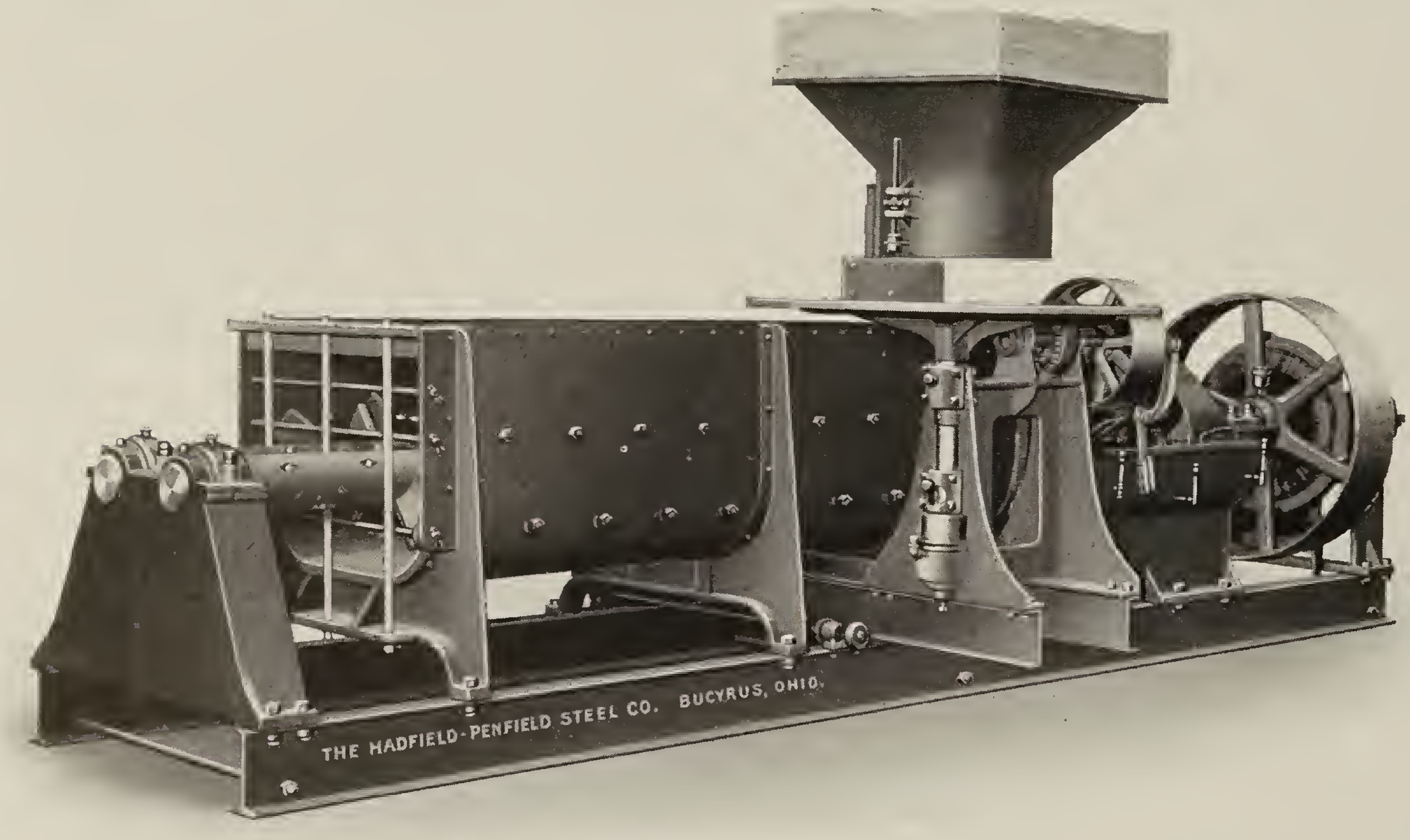
DIMENSIONS

Length over all	25′	1″
Length of sills	24′	6″
Width over all	7′	7⅝″
Width of sills, center to center	5′	0″
Height over all	5′	11″
Height to top of shell	5′	1½″
Height to center of driving pulley	3′	4″
Height to center of tempering shaft	3′	4″
Length from discharge outlet to center of pulley	17′	9⅛″

American No. 471 Double-Shaft Pug Mill

THIS Pug Mill is intended for use for materials requiring a more thorough mixing than can be obtained from the use of a single-shaft pug mill. It is modern in design and construction and has a varying capacity, depending on the time necessary to retain the material in the machine.

For building brick with average material it will prepare clay for 5000 to 10,000 brick per hour.



American No. 471 Double-Shaft Pug Mill With No. 399 Disc Feeder

The illustration shows the pug mill with the American No. 399 Disc Feeder attached.

The Disc Feeder is not furnished with the Pug Mill unless specially ordered.

SPECIFICATIONS

Gear Frame

The gear frame is a one-piece casting closed at the bottom for retaining oil.

Shafts

The tempering shafts are forged steel, 7″ in diameter, drilled for knife shanks and keys. The pulley shaft is 4″ in diameter.

Bearings

Thrust bearings are marine type such as we have been using on our pug mills for many years and which are giving the best service. All other bearings are ring oiling.

Gears

All gears are made from cast steel with teeth cut from solid metal. Main gear 51½″ P. diameter x 9½″ face; Pinion 8½″ P. diameter x 10½″ face, and pug shaft gears 16″ diameter x 9″ face. All gears run in oil.

Shell

The shell is formed from ¼″ steel plate, 10′ long, 32⅝″ deep and 41″ wide.

Knives

There are eighty steel pug knives in this machine, selected for wearing quality as well as strength. They are adjustable for pitch and knives from opposite shafts overlap about 6″.

Driving Pulley

The friction clutch driving pulley is 48″ in diameter for 12″ belt.

Speed

The speed of driving pulley for average conditions is 150 R.P.M.

Power

Power consumption will vary from 25 to 40 H.P. according to conditions.

Weight with Feeder Attached

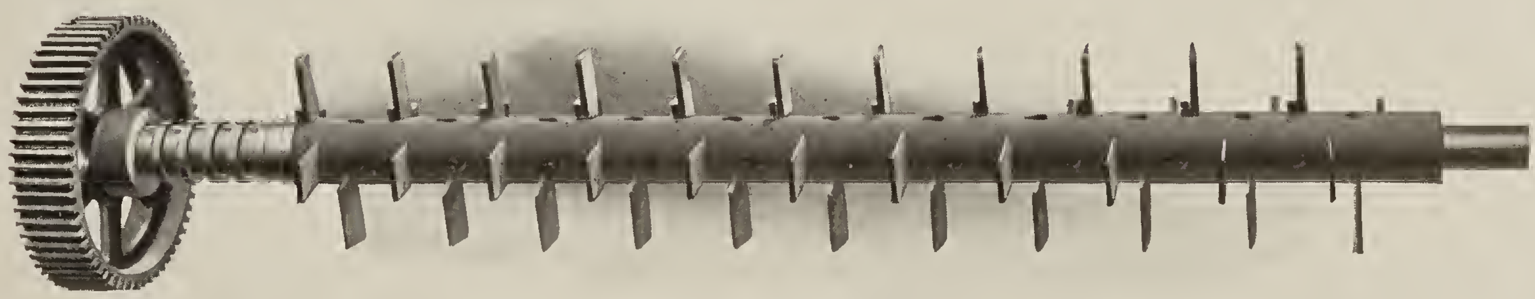
19,900 pounds.

DIMENSIONS

Length over all	22′ 7″
Length of sills	22′ 0″
Width over all	7′ 1″
Width of sills	4′ 7″
Height over all	5′ 5″
Height to top of shell	4′ 8″
Height to center of driving pulley	3′ 3″
Height to center of tempering shaft	3′ 0″
Length from discharge end to center of pulley	18′ 6″

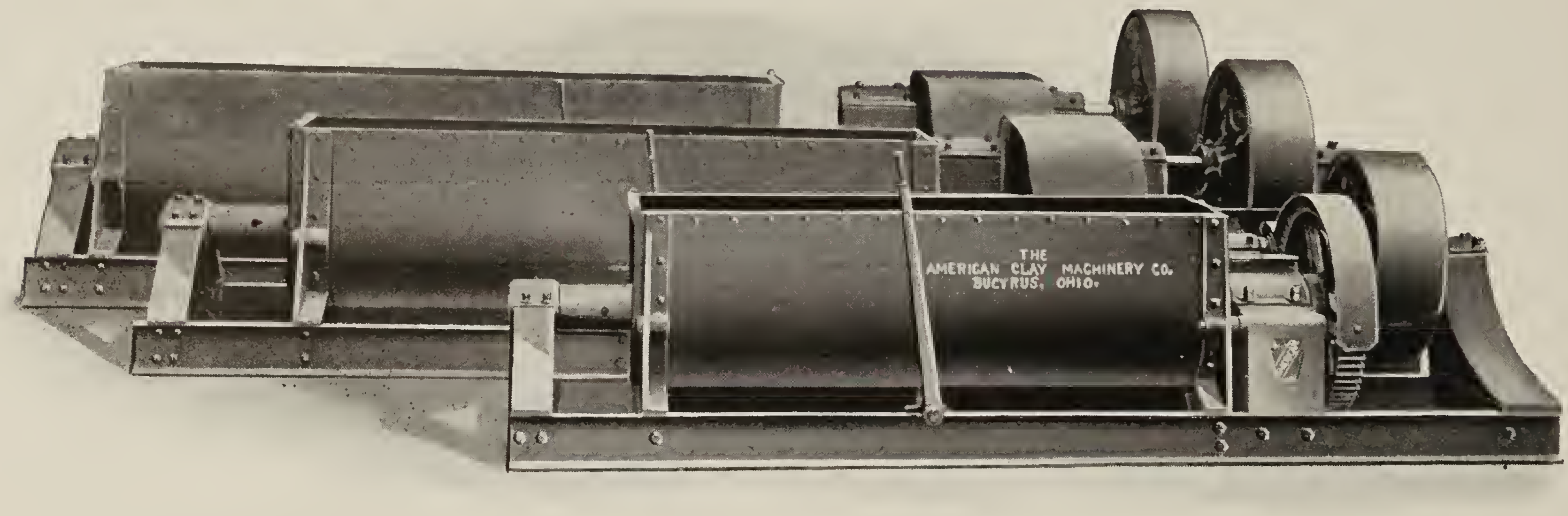
American Pug Mill Shaft

THE round shaft and adjustable knives as incorporated in our standard line of Pug Mills contribute to greater efficiency. The shaft is large in diameter and is free from vibrations, reducing the tendency to crystallize. In service, they become polished, so that the full area of the tempering chamber is effective entirely up to the shaft. The adjustable knife feature makes it possible to obtain the maximum amount of mixing and the proper quantity of material at all times. The method of keying the knives in the shaft provides a safe method of securing the blade to the shaft and at the same time a convenient method of adjustment for pitch and for renewal.



American Pug Mill Shaft

Pug Mills



PUG MILLS so-called are in reality mixing machines used for the purpose of preparing clay for the expressing machine. The demand for better wares and less waste calls for better preparation of material than has been obtained in the old style pug mills and to meet this condition, longer pug mills have been resorted to with fair results.

The objection to a long pug mill is the distance between bearings on the tempering shaft, which is so great as to permit of the shaft vibrating between supports, resulting in crystallization and breakage.

Another objection is the increased amount of space required. To meet the above conditions, we have developed our line of standard pug mills, increasing the area of tempering chamber, increasing the number of knives, increasing the speed of the tempering shaft and decreasing the pitch of the knives so as to obtain the same quality of mixing as in the longer pug mills of previous design.

At the same time other desirable features were incorporated, including round semi-steel tempering shaft with cored holes for knife shanks and keys.

The knives are adjustable for pitch as well as direction of motion. The end thrust is of the marine type, taking the thrust from either direction, enabling the machine to be run in either direction and to discharge the material at either end of the tempering chamber. In other words, they may be readily converted from a right to a left-hand machine or to discharge the tempered clay between the gear frame and the tempering chamber or at the opposite end as desired.

The bearings are ring oiling, excepting the thrust bearing, and the gears run in an oil-tight case.

The machines are heavier than the older type and the metal is distributed with a view towards absorbing the vibrations and stresses.

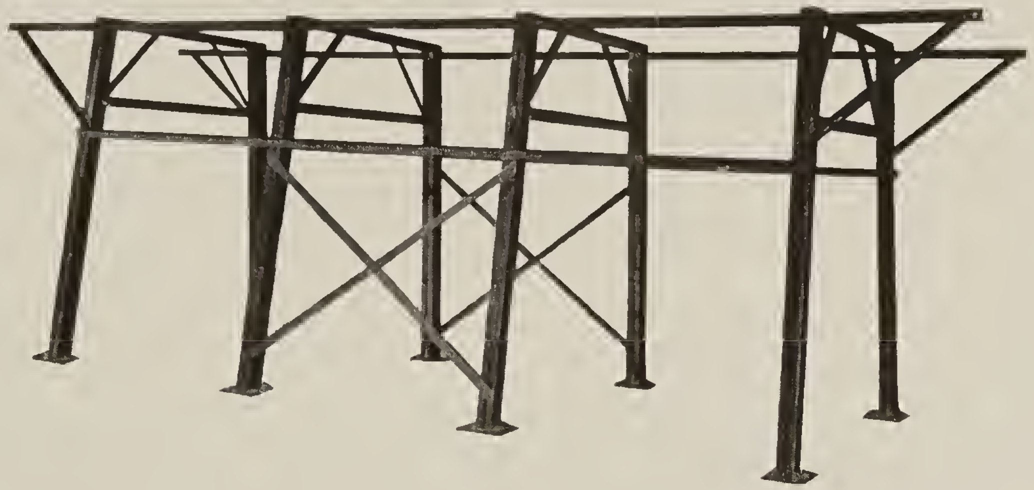
The intent of the designer is to produce a utility machine that will stand up to its work indefinitely and do good work with a minimum amount of power.

All of these machines are single geared and have open ends.

The pitch of the knives is readily adjusted so as to retain sufficient material evenly throughout the entire length of the tempering chamber, a result that can be obtained in no other way.

A space is left between the tempering chamber and shaft bearings to avoid the possibility of clay working into the bearings.

American Steel Frame for Mounting Pug Mill



IN designing modern Brick Plants it is good practice to set the Pug Mill over the Brick Machine so that the clay will feed by gravity from the Pug Mill direct into the Brick Machine. It has been the custom to support the Pug Mill on a cumbersome wood frame, which in case of fire, burns out from under the Pug Mill, allowing it to fall on the Brick Machine, often ruining it, and at the same time breaking and bending the Pug Mill so it is a total loss. In order to prevent this we have designed a line of neat, strong, well braced structural steel frame supports to mount the Pug Mill over the Brick Machine.

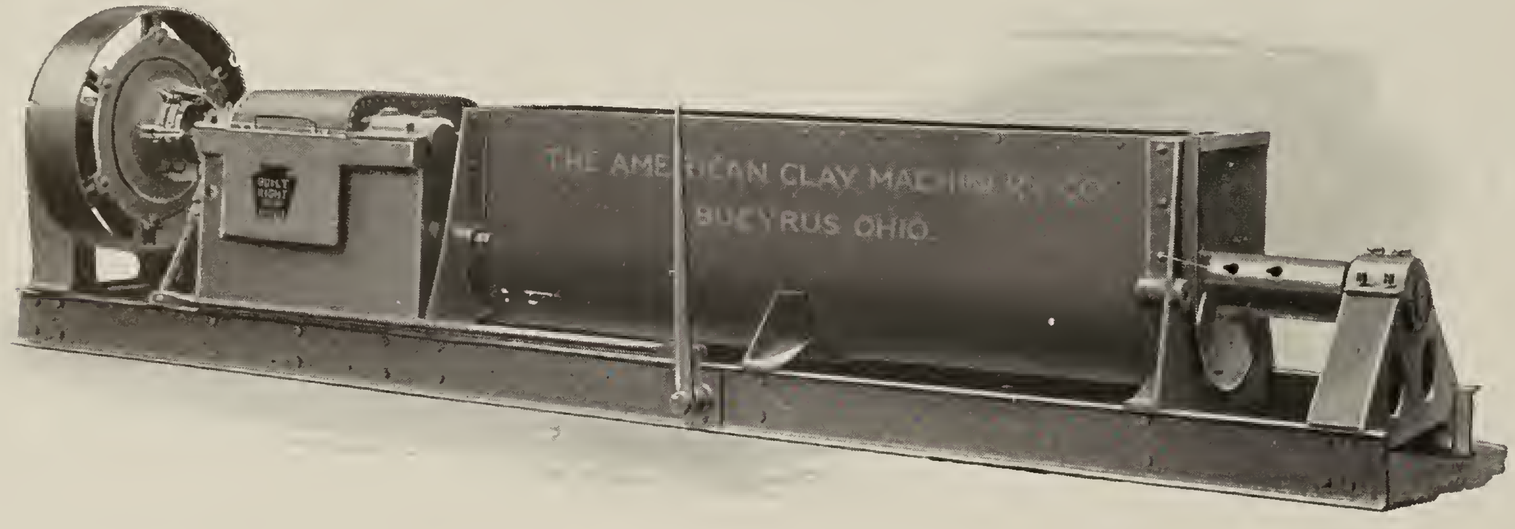
The height of standard frame is 8′ 6″. Each leg is provided with a base plate, which should be anchored to a brick or concrete foundation. The length is governed by the length of the Pug Mill. The width from center to center of foundation bolts is 7′ 4″; the width of the top of the steel frame where the Pug Mill sets is 6′ 9″. The wood platform can be made as wide as desired, 8′ is preferable. This we do not furnish. The frame is made long enough to permit the operator to walk around to either side at the discharge end of the Pug Mill.

Where necessary we build a special frame to suit conditions.

Each frame is set up and carefully fitted before being knocked down for shipment.

American Nos. 291 and 302 Pug Mills

THESE are single-geared, single-shaft pug mills designed for thoroughly tempering clay and shale. The design of the machine is such as to permit driving it in either direction and arranging it for either the pushing or the pulling type. The two machines are identical in construction with the exception that the No. 302 Pug Mill is the pushing type arranged to push the material forward, away from the driving end and discharge at the forward end of the shell, while the No. 291 Pug Mill is arranged to pull the material and discharge between the gear frame and the shell.



American No. 302 Pug Mill Pushing Type

RATED CAPACITY PER HOUR

Building Brick, 10,000 to 15,000 per hour.

Capacity is governed by speed at which the pulley is driven, angle at which the tempering knives are set, nature and character of clay, quality of tempering required and by management.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearing and forming an oil reservoir for the gears.

Shafts

The tempering shaft is 8″ diameter, and arranged for inserting the tempering knives, which are secured in position by steel keys. The pulley shaft is steel 4″ diameter.

Bearings

The machine is fitted with ring oiling babbitted bearings. The bearing on the driving end of the tempering shaft is of the marine type for end thrust and is 18″ long. The bearing on the forward end of this shaft is $9\frac{1}{2}''$ long. Bearings on the driving shaft are 18″ and 14″ long.

Gears

The gears are cast American gear metal 2″ pitch, 10″ face. Master gear is $37\frac{7}{8}''$ diameter, driving pinion is $9\frac{5}{8}''$ diameter, ratio 4 to 1. They are encased and run in a bath of oil.

Shell

The shell is made from one piece of tank steel $\frac{5}{16}''$ thick. The tempering chamber is 12′ long, 32″ wide and 39″ deep.

Knives

The tempering knives are steel. They are inserted in the tempering shaft and secured by steel keys, the arrangement being such as to permit setting the knives at any angle required for thorough tempering. The blades are $10\frac{3}{4}''$ long and $4\frac{1}{2}''$ wide. 52 knives are required for the tempering shaft.

Driving Pulley

The machine is furnished with a friction clutch driving pulley 48″ diameter, 12″ face.

Speed

The speed of the driving pulley should be 120 R.P.M. This may be increased or decreased according to the capacity desired and the character of the work.

Power

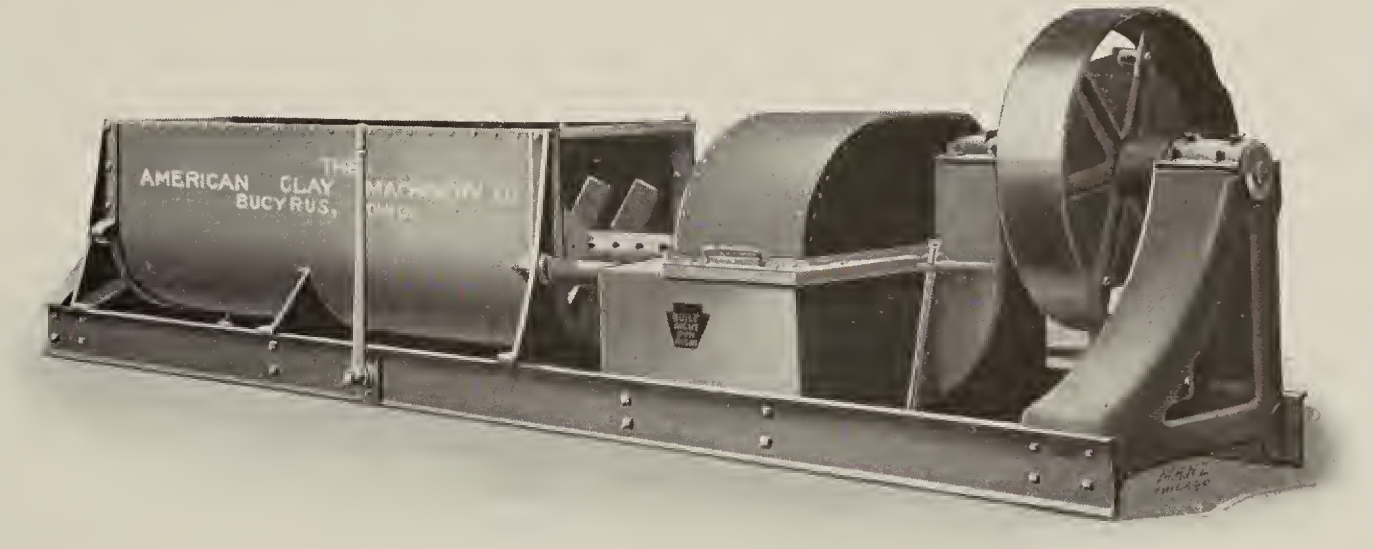
Power required to operate this machine will vary from 20 H.P. to 40 H.P., according to capacity, character of clay and quality of mixing required.

Weight

15,415 pounds.

DIMENSIONS

Length over all	23′
Length of sills	23′
Width over all	6′
Width of sills	4′ 4″
Height over all	5′ 5½″
Height to top of shell	4′
Height to center of driving pulley	3′ 5½″
Height to center of tempering shaft	3′ 5½″
Height to center of tempering shaft	2′ 1″
Length from discharge end to center of pulley on No. 302 Pug Mill	18′ 7¾″
Length from discharge end to center of pulley on No. 291 Pug Mill	7′ 8¼″



American No. 291 Pug Mill Pulling Type

American No. 387 Bevel Geared Pug Mill

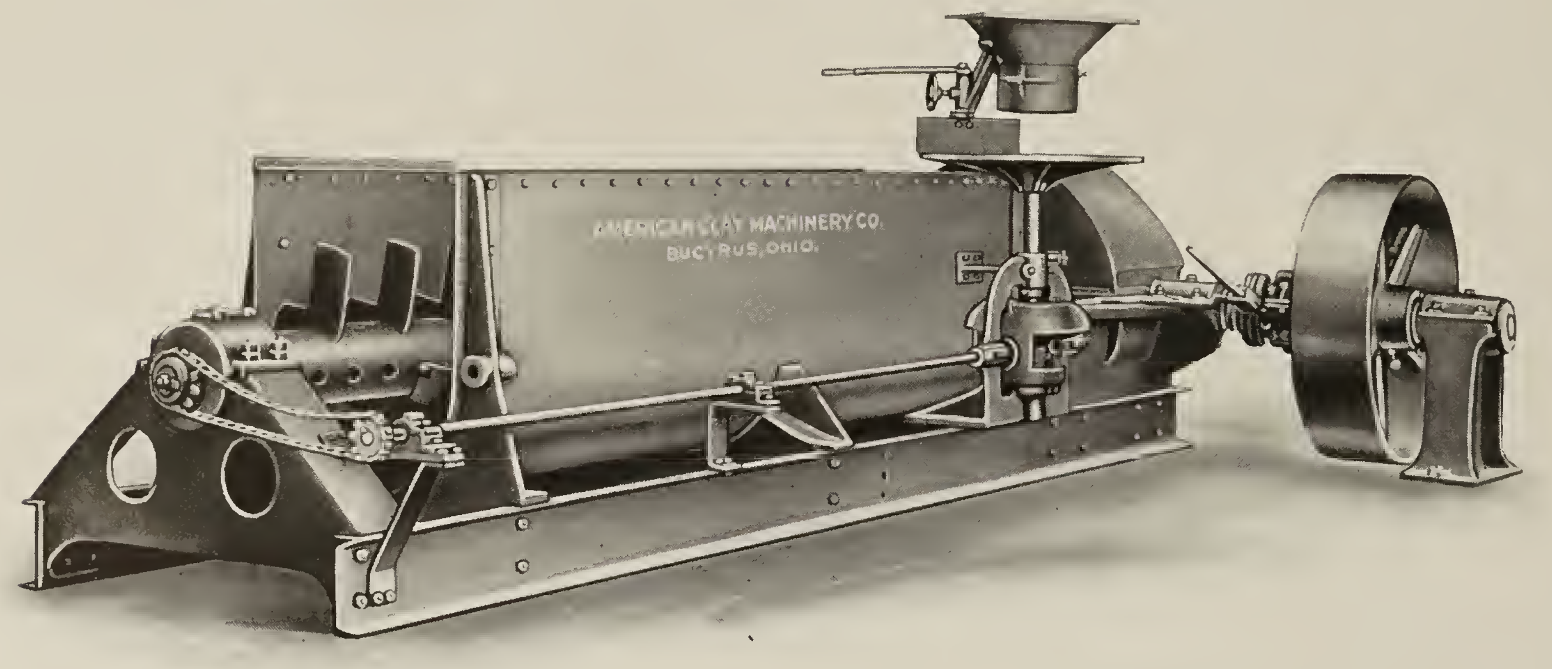
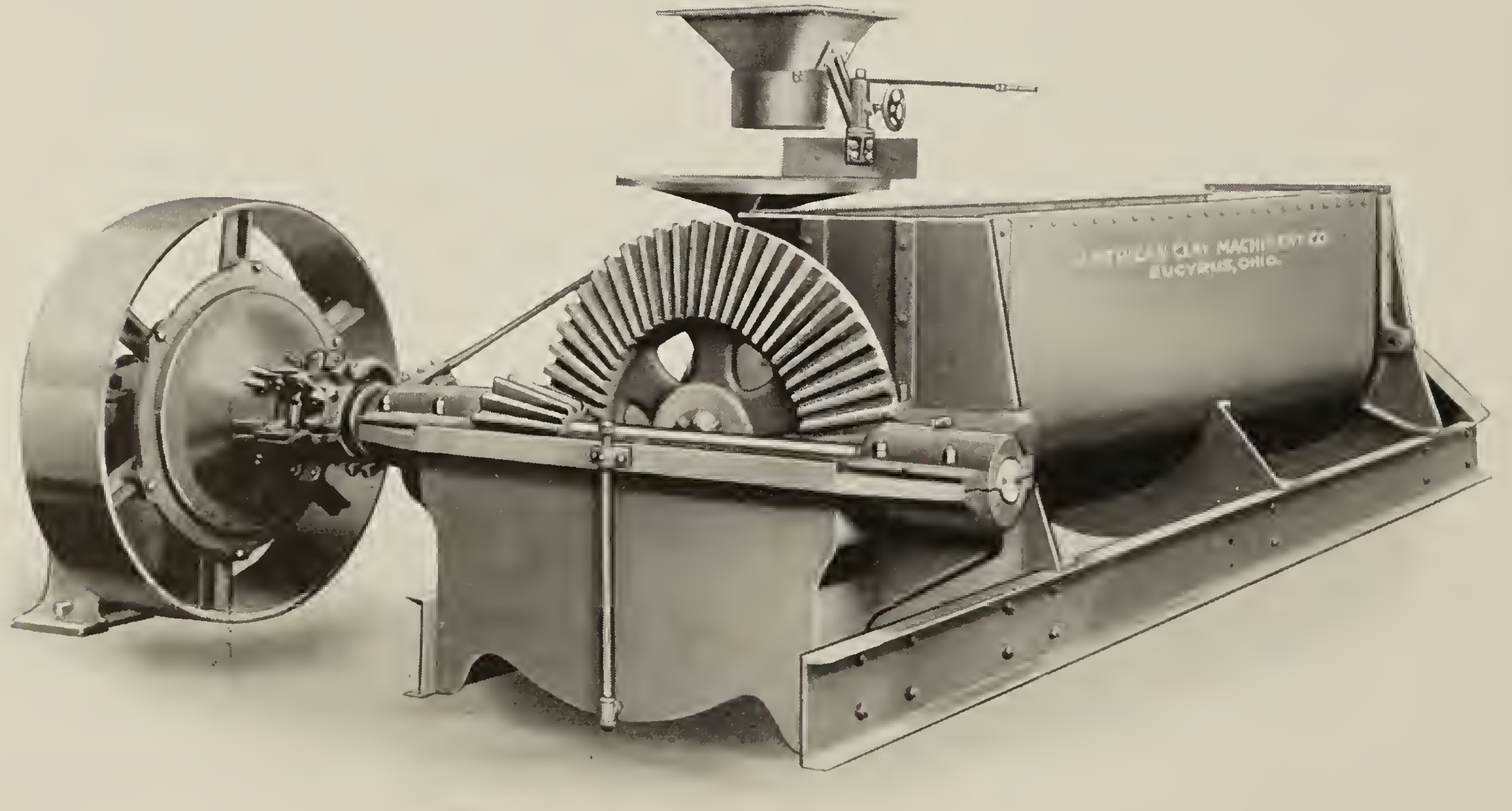


Illustration Shows Method of Driving No. 162 Disc Feeder Attached to Pug Mill



American No. 387 Bevel-Geared Pug Mill with Gear Cover Removed

American No. 387 Bevel Geared Pug Mill

THIS is a single geared, bevel geared, single shaft Pug Mill, designed for thoroughly tempering clay and shale. The design of the machine is such as to permit driving it in either direction and arranging it for either the pushing or pulling type.

The illustration shows the pushing type machine arranged to push the material forward away from the driving end and discharge at the forward end of the shell. The pulling type machine will discharge at the gear end.

The Disc Feeder is not a part of the Pug Mill and is not furnished unless especially ordered with the Pug Mill.

RATED CAPACITY PER HOUR

Building Brick, 10,000 to 15,000 per hour. Capacity is governed by speed at which the pulley is driven, angle at which the tempering knives are set, nature and character of clay, quality of tempering required and by management.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearing and forming an oil reservoir for the gears.

Shafts

The tempering shaft is 8″ diameter, and arranged for inserting the tempering knives which are secured in position by steel keys. The pulley shaft is steel 4″ diameter.

Bearings

The machine is fitted with ring oiling babbitted bearings. The bearing on the driving end of the tempering shaft is of the marine type for end thrust and is 18″ long. The bearing on the forward end of this shaft is 9½″ long. Bearings on the driving shaft are 18″ and 14″ long.

Bevel Gears

The gears are cast American gear metal 2½″ pitch, 10″ face. Master gear is 45½″ diameter, driving pinion is 11¼″ diameter, ratio 4 to 1. They are encased and run in a bath of oil.

Shell

The shell is made from one piece of tank steel 5/16″ thick. The tempering chamber is 12′ long, 32″ wide and 39″ deep.

Knives

The tempering knives are steel. They are inserted in the tempering shaft and secured by steel keys, the arrangement being such as to permit setting the knives at any angle required for thorough tempering. The blades are 10¾″ long and 4½″ wide. 52 knives are required for the tempering shaft.

Driving Pulley

The machine is furnished with a friction clutch driving pulley 48″ diameter, 12″ face.

Speed

The speed of the driving pulley should be 120 R.P.M. This may be increased or decreased according to the capacity desired and the character of the work.

Power

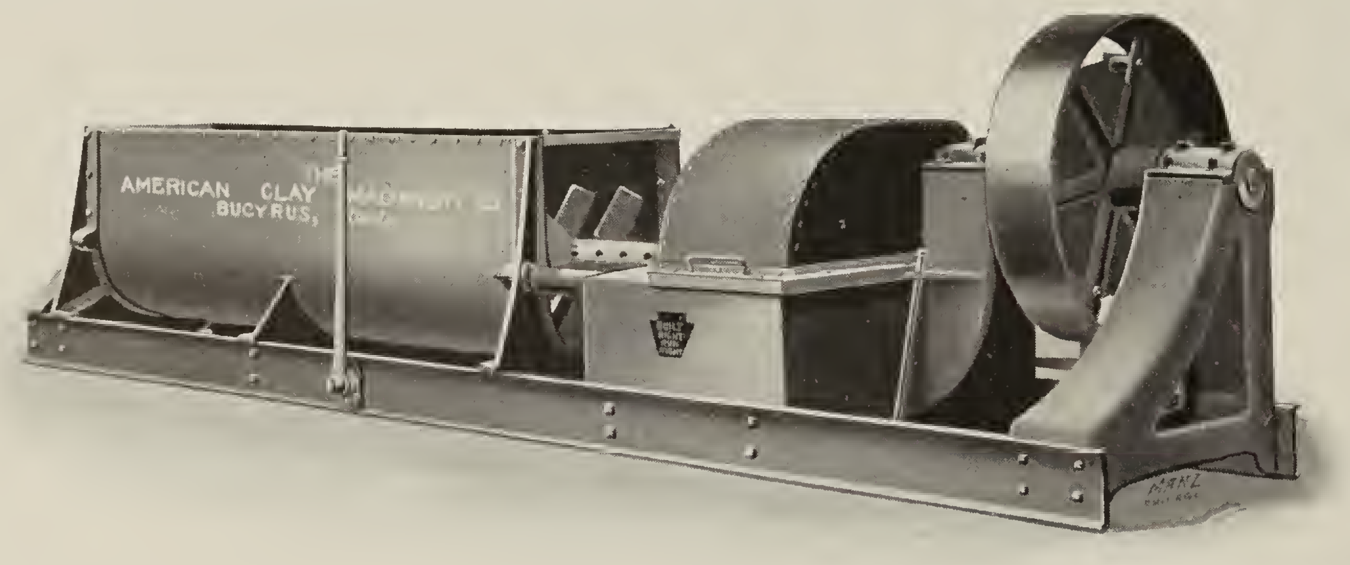
Power required to operate this machine will vary from 20 H.P. to 40 H.P. according to capacity, character of clay and quality of mixing required.

DIMENSIONS

Length over all	19′	6″
Length of sills	18′	6″
Width over all	10′	6″
Width of sills	4′	4″
Height over all	5′	5½″
Height to top of shell	4′	
Height to center of driving pulley		25″
Height to center of tempering shaft		25″
Length from discharge end to center of pulley shaft on Pushing type machine	15′	1⅜″
Length from discharge end to center of pulley shaft on Pulling type machine	4′	6⅜″
Distance from center of driving pulley to center of machine	5′	5½″
Space to discharge		17″

American Nos. 303 and 304 Pug Mills

THESE are single-geared, single shaft Pug Mills designed for thoroughly tempering clay and shale. The design of the machine is such as to permit driving it in either direction and arranging it for either the pushing or the pulling type. The two machines are identical in construction with the exception that the No. 304 Pug Mill is the pushing type arranged to push the material forward, away from the driving end and discharge it at the forward end of the shell, while the No. 303 Pug Mill is arranged to pull the material and discharge between the gear frame and the shell.



American No. 303 Pug Mill Pulling Type

RATED CAPACITY PER HOUR

Building Brick, 4,000 to 7,500 per hour.

Capacity is governed by speed at which the pulley is driven, angle at which the tempering knives are set, nature and character of clay, quality of tempering required and by management.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting, carrying the shaft bearings and forming an oil reservoir for the gears.

Shafts

The tempering shaft is 7″ diameter and arranged for inserting the tempering knives which are secured in position by steel keys. The pulley shaft is steel, 3″ diameter.

Bearings

The machine is fitted with ring oiling babbitted bearings. The bearing on the driving end of the tempering shaft is of the marine type for end thrust and is 16″ long. The bearing on the forward end of this shaft is 8½″ long. Bearings on the driving shaft are 16″ and 12″ long.

Gears

The gears are cast American gear metal 1¾″ pitch; 8″ face. Master gear is 34″ diameter, driving pinion is 8⅜″ diameter, ratio 4 to 1. They are encased and run in a bath of oil.

Shell

The shell is made from one piece of tank steel 5/16″ thick. The tempering chamber is 10′ long, 28″ wide, and 33¾″ deep.

Knives

The tempering knives are steel. They are inserted in the tempering shaft and secured by steel keys, the arrangement being such as to permit setting the knives at any angle required for thorough tempering. The blades are 9¼″ long and 4½″ wide. 44 knives are required for the tempering shaft.

Driving Pulley

The machine is furnished with a friction clutch driving pulley 42″ diameter, 10″ face.

Speed

The speed of the driving pulley should be 120 R.P.M. This may be increased or decreased according to the capacity desired and the character of the work.

Power

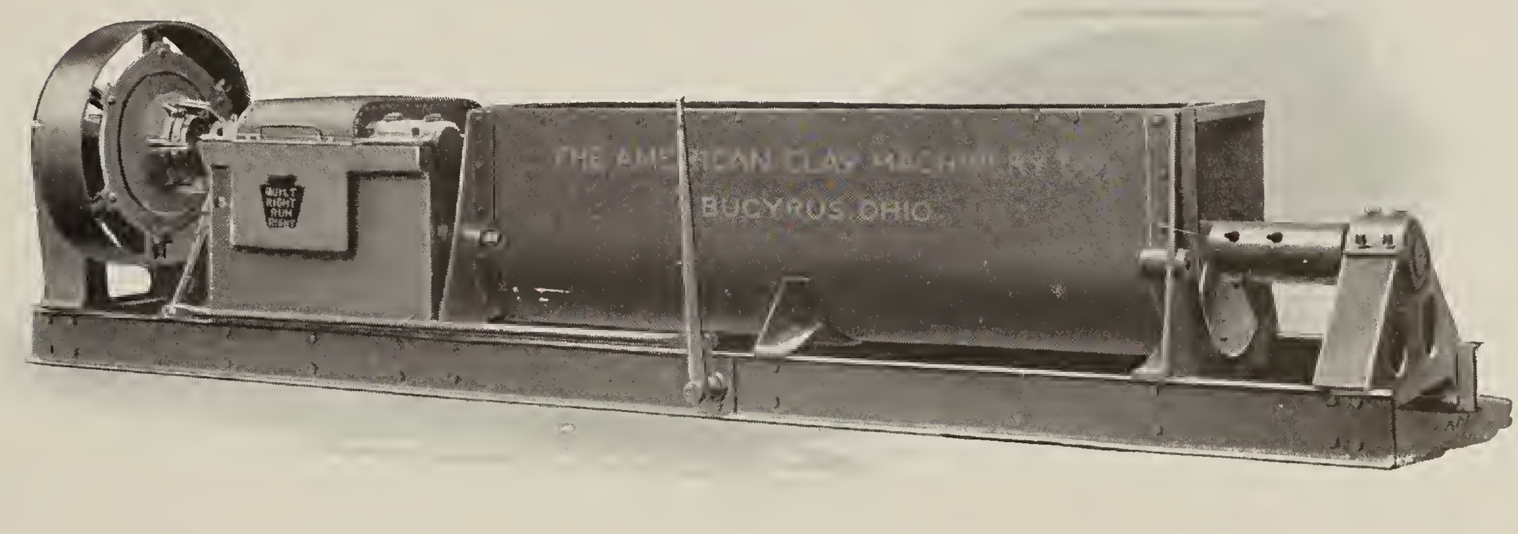
Power required to operate this machine will vary from 15 H.P. to 30 H.P. according to capacity, character of clay and quality of mixing required.

Weight

11,000 pounds.

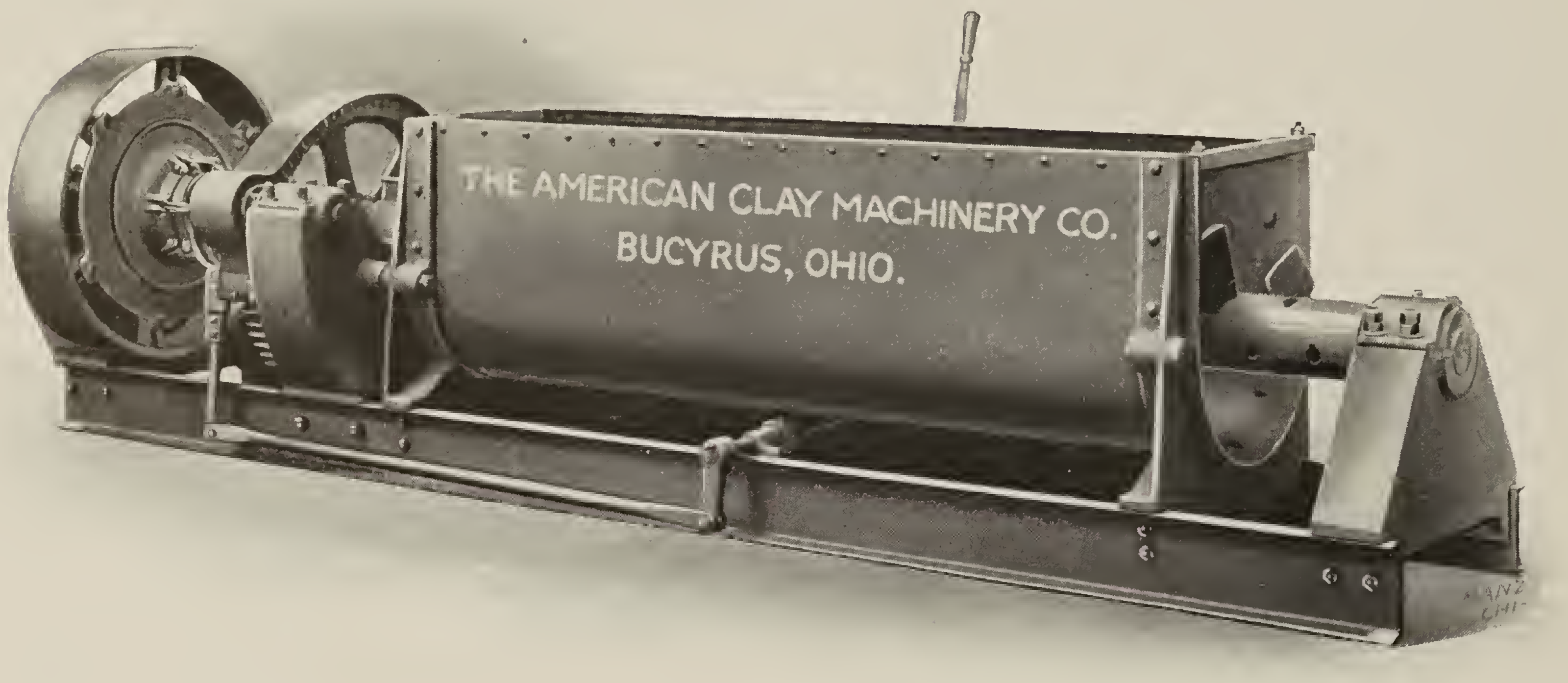
DIMENSIONS

Length over all	20′	
Length of sills	20′	
Width over all	5′	4″
Width of sills	3′	10″
Height over all	4′	10″
Height to top of shell	3′	6¾″
Height to center of driving pulley	3′	1″
Height to center of tempering shaft	1′	11″
Length from discharge end to center of pulley on No. 304 Pug Mill	15′	11¾″
Length from discharge end to center of pulley on No. 303 Pug Mill	6′	11¾″



American No. 304 Pug Mill Pushing Type

American Nos. 282 and 283 Pug Mills



American No. 282 Pug Mill

THESE are single geared, single shaft Pug Mills designed for thoroughly tempering clay and shale. The design of the machine is such as to permit driving it in either direction and arranging it for either the pushing or the pulling type. The two machines are identical in construction with the exception that the No. 282 Pug Mill is the pushing type arranged to push the material forward, away from the driving end and discharge at the forward end of the shell, while the No. 283 Pug Mill is arranged to pull the material and discharge between the gear frame and the shell.

Rated Capacity Per Hour

Building Brick, 2,000 to 4,000 per hour.

Capacity is governed by speed at which the pulley is driven, angle at which the tempering knives are set, nature and character of clay, quality of tempering required and by management.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting, carrying the shaft bearings.

Shafts

The cast iron tempering shaft is 6¼″ diameter, made from the same material used in American gears and arranged for inserting the tempering knives which are secured in position by steel keys. The pulley shaft is steel, 2½″ diameter.

Bearings

The machine is fitted with ring oiling babbitted bearings. The bearing on the driving end of the tempering shaft is of the marine type for end thrust and is 14″ long. The bearing on the forward end of this shaft is 8″ long. Bearings on the driving shaft are 10″ long.

Gears

The gears are cast American gear metal 1½″ pitch; 4½″ face. Master gear is 34⅜″ diameter, driving pinion is 6¼″ diameter, ratio 5.5 to 1. They are covered to exclude dirt.

Shell

The shell is made from one piece of tank steel ¼″ thick. The tempering chamber is 8′ long, 24″ wide and 29″ deep.

Knives

The tempering knives are steel. They are inserted in the tempering shaft and secured by steel keys, the arrangement being such as to permit setting the knives at any angle required for thorough tempering. The blades are 8″ long and 4½″ wide. 31 knives are required for the tempering shaft.

Driving Pulley

The machine is furnished with a friction clutch driving pulley 36″ diameter, 10″ face.

Speed

The speed of the driving pulley should be 140 R.P.M. This may be increased or decreased according to the capacity desired and the character of the work.

Power

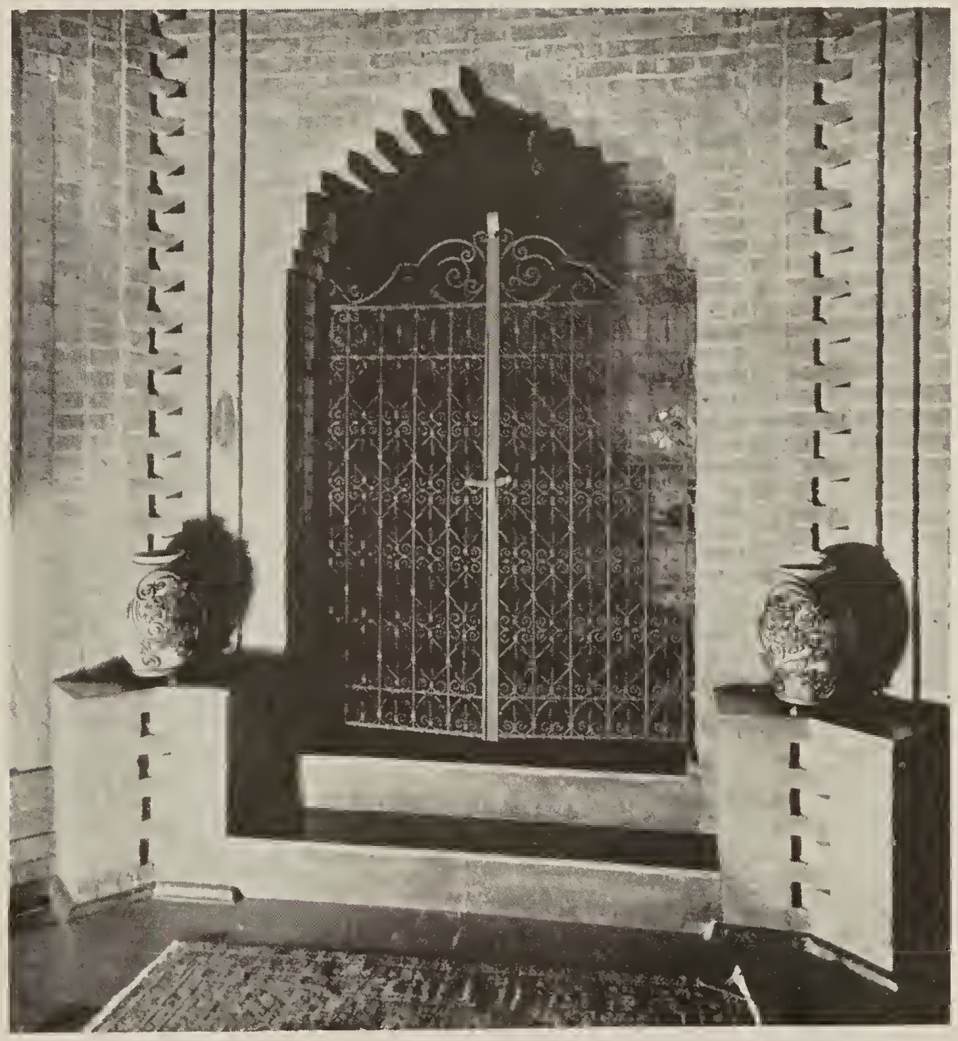
Power required to operate this machine will vary from 10 H. P. to 15 H. P. according to capacity, character of clay and quality of mixing required.

Weight

5,760 pounds.

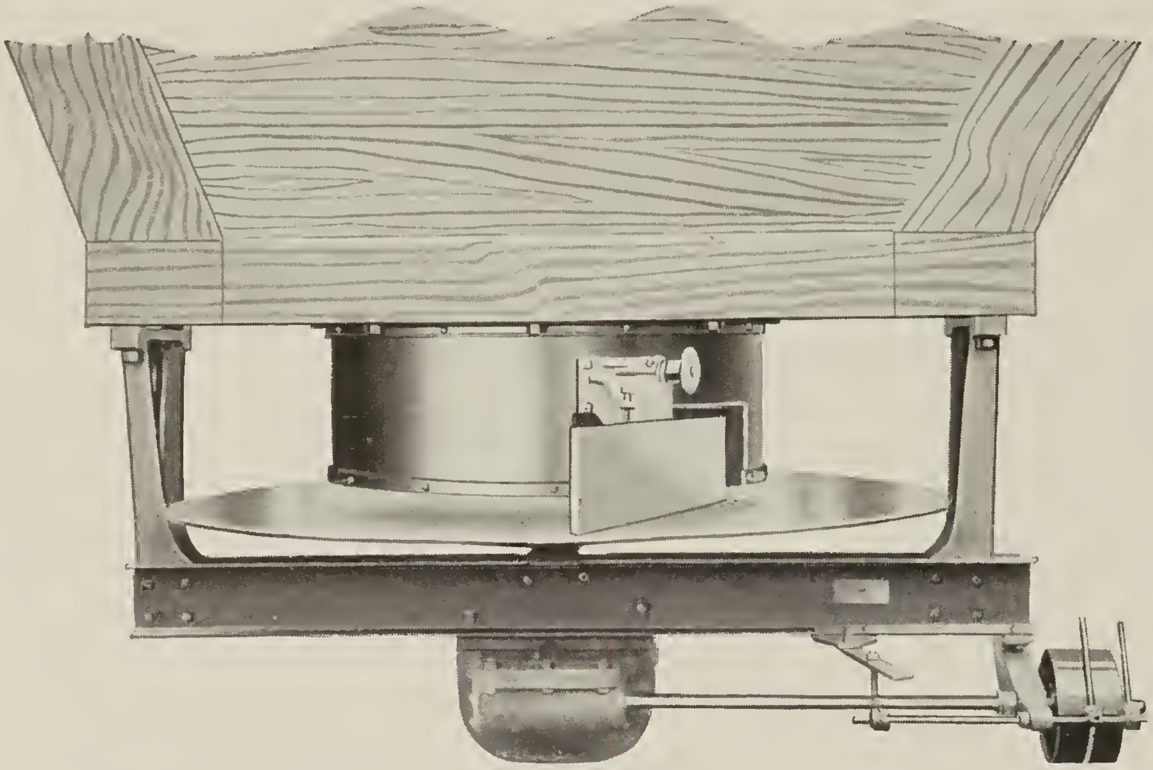
DIMENSIONS

Length over all	14′	5″
Length of sills	14′	4″
Width over all	4′	10″
Width of sills	2′	10″
Height over all	3′	10″
Height to top of shell	3′	3″
Height to center of driving pulley	2′	4½″
Height to center of tempering shaft	1′	10″
Length from discharge end to center of pulley on No. 282 Pug Mill	11′	¾″
Length from discharge end to center of pulley on 283 Pug Mill	3′	11½″



BRICKWORK AND IRONWORK IN AN ARTISTIC ENTRANCE

A note of rare beauty is secured in this unusual hall entrance through the proper use of brick and a wrought-iron gate. The architectural possibilities are practically unlimited.



American No. 803 Disc Feeders

THIS is a simplified design Disc Feeder for metering crushed or crushed and ground clays from storage bins. When used under small bins the smaller sizes will function nicely unless the moisture content is high, in which case a larger size should be selected, owing to the tendency of sticky material to arch over a small outlet and retard or stop the downward flow.

When used under large bins the larger sizes are advisable for the same reason. Also, when the material is finely ground and stored in large bins two or more of the larger sizes will sometimes be found advantageous.

When used to improve the quality of tempering in a pug mill, water is sprayed on the clay around the outlet over the disc. In this case the feeder should discharge directly into the pug mill and be equipped with a proper system of piping, which is furnished as an extra.

The outlet is made from steel plate rolled to size with angle flange for bolting to underside of bin. The disc is a steel circle bolted to a cast iron spider faced, bored and keyed to a 3-inch vertical steel shaft.

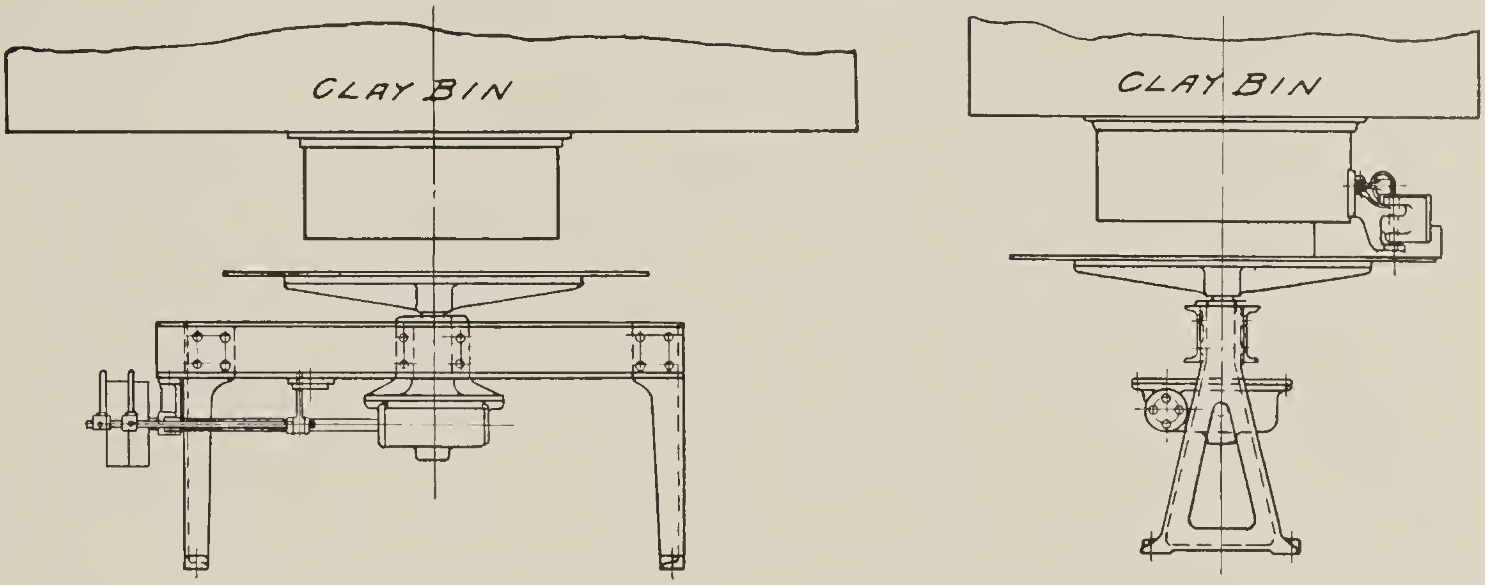
The drive is by means of a worm wheel accurately machined and a machined steel worm running in oil. For controlling the rate of discharge the angle of the plow is made more or less by means of a hand wheel.

The worm shaft is driven by means of tight and loose pulleys. Friction clutch pulley substituted as an extra.

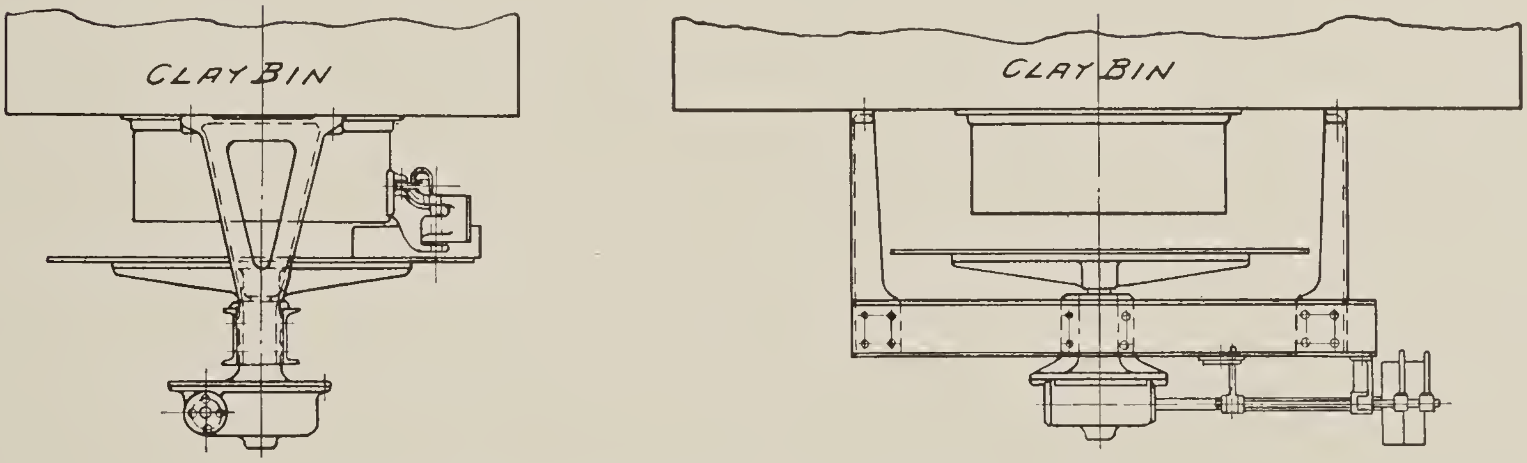
The frame, step and outboard bearing are mounted on channels, and supported on steel legs, so made that the device may be supported on its own foundation or suspended from the underside of the bin as is most convenient.

Any size has sufficient capacity for all purposes so long as the material does not clog above the disc.

American No. 803 Disc Feeders



American No. 803 Disc Feeder In Upright Position Supported From Below



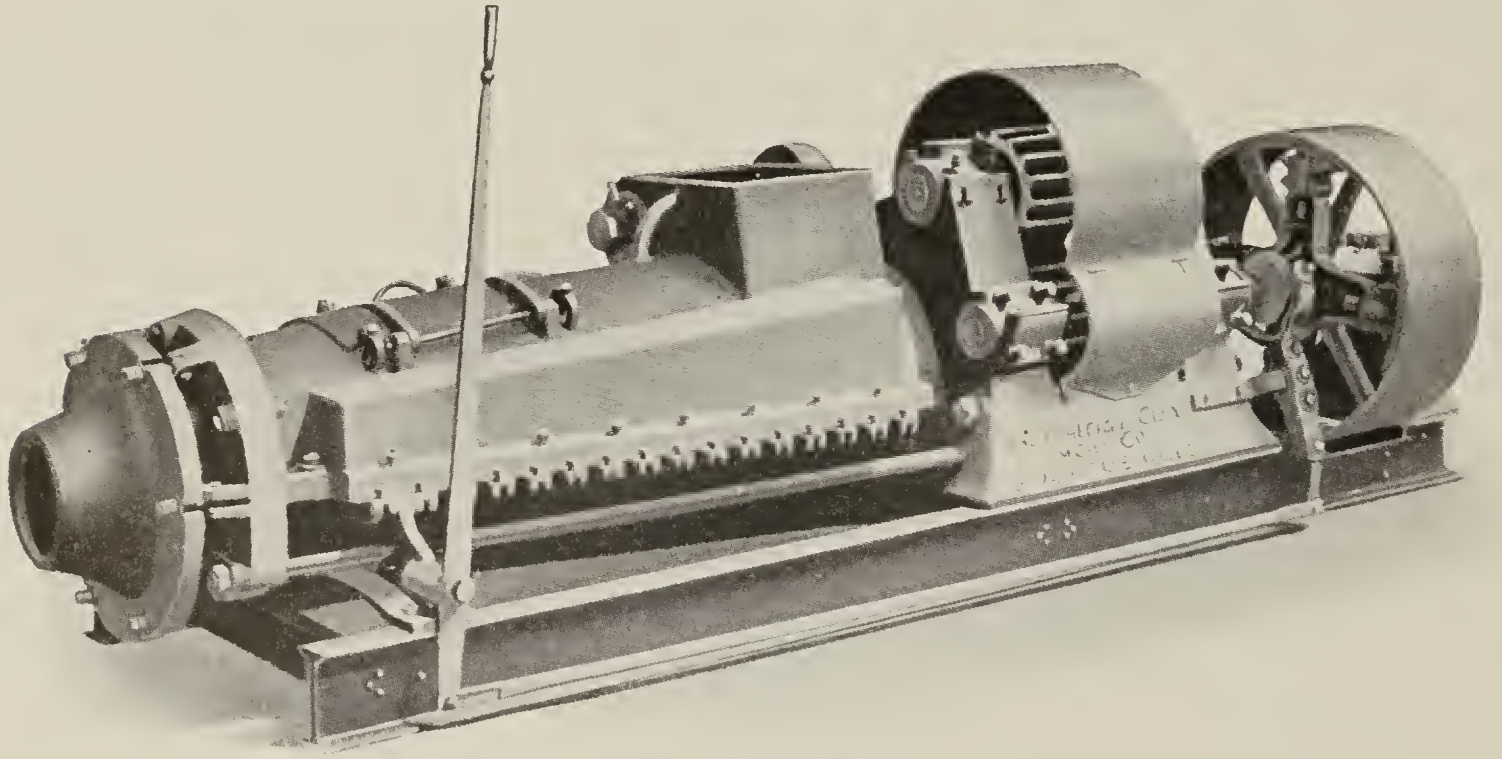
American No. 803 Disc Feeder Suspended From Clay Bin

GENERAL SPECIFICATIONS

SIZE NO.	803	803A	803B	803C
Diameter disc	5′	6′	7′ 3″	8′ 1″
Diameter outlet	2′	3′	4′	5′
Length of sills	6′ 2″	7′ 2″	8′ 5″	9′ 3″
Center to center discs and pulleys	3′ 7″	4′ 1″	4′ 8″	5′ 1″
Center disc to end shaft	4′	4′ 6″	5′ 2″	5′ 6″
Length over all	6′ 11″	7′ 11″	9′ 2″	9′ 11″
Width over all	5′ 2″	6′ 2″	7′ 5″	8′ 3″
Height to top of disc, upright	3′ 5¾″	3′ 5¾″	3′ 5¾″	3′ 5¾″
Height to top of disc, suspended	2′ 4″	2′ 4″	2′ 4″	2′ 4″
Height over all, upright	5′ 1½″	5′ 1½″	5′ 1½″	5′ 1½″
Height over all, suspended	3′ 11¾″	3′ 11¾″	3′ 11¾″	3′ 11¾″
Weight, pounds	1800	2050	2350	2700

Tight and loose pulleys, 12″ x 3″. Speed of pulleys 100 to 150 R.P.M.

American No. 229 Taper Tub Pug Mill



No. 229 Taper Tub Pug Mill

THIS Pug Mill was designed for retempering clay and is used where thorough tempering is required. The clay must be partially tempered or soaked before it is delivered to this machine. The No. 229 Pug Mill is adapted particularly for fire clay used in glass works, also potteries and terra cotta plants. It is made short, the discharge end being only a short distance from the hopper, so that the clay can be returned from the discharge back into the mill to be repugged as often as desired.

The tempering cylinder, which is 6′ 1″ long, is made tapering. The lower half is provided with rectangular steel cleaner teeth mounted on a steel rod, forming a hinge and held in position by a shearing pin. These cleaner teeth extend towards the pug shaft between the tempering knives. The knives working between the cleaner teeth promote thorough mixing of the material. Should a stone or piece of iron get into the mill the small shearing pin will shear off, permitting the cleaner teeth to fold up into the upper half of the cylinder or concave, which is provided with a cavity so that the cleaner teeth can fold up sufficiently to let the knives clear them without breaking.

The tub is tapering from the receiving to the discharge end, to which is bolted an extension, and to this is hinged a front having a 10″ round opening. The front is provided with a safety attachment which shears a pin, allowing the front to open when the clay in the mill becomes too stiff. The discharge opening may be made any size required.

The mill is provided with a self-contained gearing frame mounted on steel I-beam skids which extend back to receive the outboard bearing on the driving shaft and forward to receive a pedestal which supports the front end of the pugging cylinder, making the mill self-contained. The pug shaft is forged from a steel billet. The bearings, which form a part of the gear frame, as made of sufficient length to carry the tempering shaft without the necessity of a bearing on the discharge end of the shaft. The rear end of the shaft is provided with our standard thrust bearing, consisting of two chilled discs between which is a bronze disc revolving in oil.

SPECIFICATIONS

Gear Frame

The gear frame of this machine is substantial and firmly mounted on 8″ I-beam skids. The bearings are a part of the frame.

Shafts

The forged steel pug shaft is 4½″ square in pugging chamber and $4\frac{7}{16}''$ in the bearings. The driving shaft is steel 2½″ diameter.

Bearings

The bearings on the pug shaft are 10″ long and the driving shaft bearings are 10″ long. All bearings are carefully made and babbitted with our special metal. The chilled discs in the end thrust bearing are 6″ diameter and run in an oil bath.

Gears

The gears are cast American gear metal. Master gear is 32¼″ diameter, 2¼″ pitch, 8¼″ face. Pinion 10.82″ diameter. Gear ratio 5.57 to 1.

Shell

The pug mill shell or tub is cast in halves, carefully planed and securely bolted. Length, 6′ 1″.

Knives

The pug shaft is fitted with 18 double blade tempering knives varying in length to conform to the taper of the pugging chamber. The blades are 4″ wide and each knife will occupy a space of $3\frac{13}{16}''$ on the shaft.

Driving Pulley

The machine is fitted with a friction-clutch pulley 36″ diameter, 14″ face.

Speed

The speed of the driving pulley should be 150 R.P.M., dependent on capacity desired and character of the work.

Power

The power required to drive this mill will vary from 30 to 40 H.P., according to capacity and character of material.

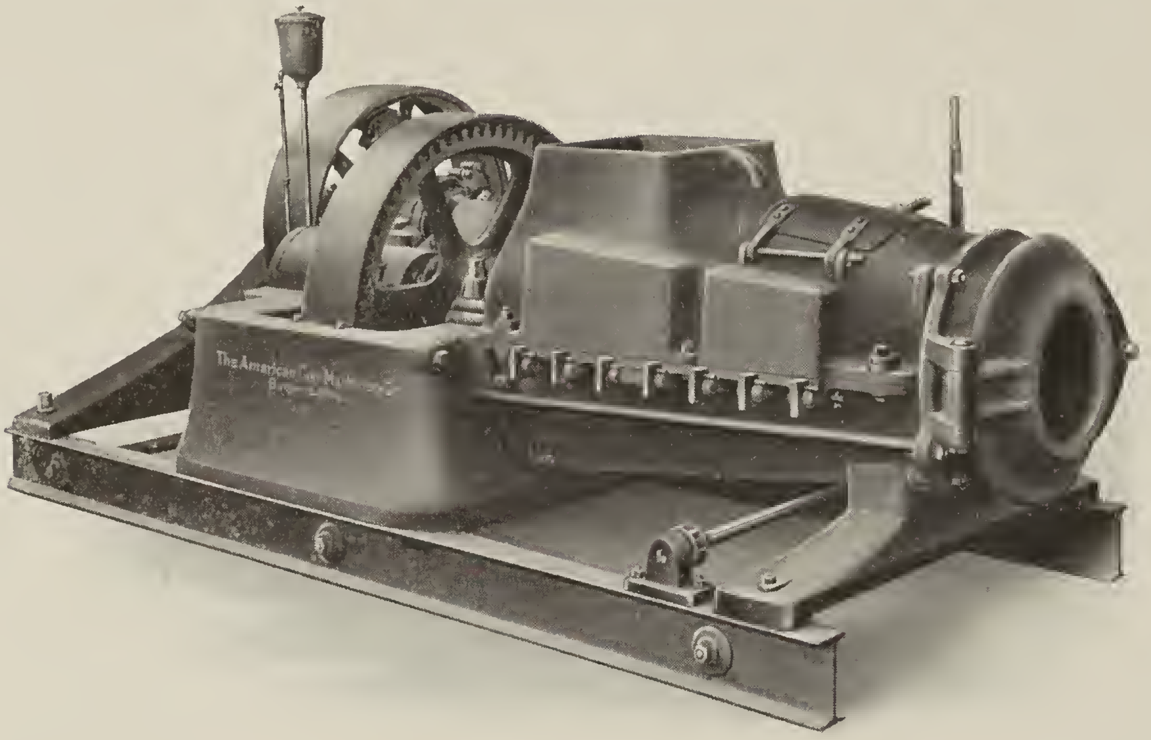
Weight

7,800 pounds.

DIMENSIONS

Length over all	14′	2½″
Width	5′	1″
Height	4′	6″
Height from top of floor to top of pug mill	3′	5″
Length from center line of driving pulley to discharge end	12′	5¼″

American No. 168 Taper Tub Pug Mill



American No. 168 Taper Tub Pug Mill

THIS mill was designed for use where thorough tempering of clay is required, particularly fire clay used in glass works, also potteries and terra cotta plants. It is made short, the discharge end being only a short distance from the hopper so that the clay can be returned from the discharge back into the mill to be repugged as often as desired.

The tempering cylinder which is 4′ long is made tapering. The lower half is provided with rectangular steel cleaner teeth mounted on a steel rod forming a hinge and held in position by a shearing pin. These cleaner teeth extend towards the pug shaft between the tempering knives. The knives working between the cleaner teeth promote thorough mixing of the material. Should a stone or piece of iron get into the mill the small shearing pin will shear off, permitting the cleaner teeth to fold up into the upper half of the cylinder or concave which is provided with a cavity so that the cleaner teeth can fold up sufficiently to let the knives clear them without breaking.

The tub is tapering from the receiving to the discharge end, to which is bolted an extension and to this is hinged a front having a 9″ round opening. The front is provided with a safety attachment which shears a pin allowing the front to open when the clay in the mill becomes too stiff. The discharge opening may be made any size required.

The mill is provided with a self contained gearing frame mounted on steel I-beam skids which extend back to receive the outboard bearing of the driving shaft and forward to receive a pedestal which supports the front end of the pugging cylinder, making the mill self contained. The pug shaft is forged from a steel billet. The bearings which form a part of the gear frame are made of sufficient length to carry the tempering shaft without the necessity of a bearing on the discharge end of the shaft. The rear end of the shaft is provided with our standard thrust bearing consisting of two chilled discs between which is a bronze disc revolving in oil.

SPECIFICATIONS

Gear Frame

The gear frame of this machine is substantial and firmly mounted on 7″ I-beam skids. The bearings are a part of the frame.

Shafts

The forged steel pug shaft is 3½″ square in pugging chamber and 5″ in the bearings. The driving shaft is steel 2½″ diameter.

Bearings

The bearings on the pug shaft are 14″ long and the driving shaft bearings are 9½″ long. All bearings are carefully made and babbitted with our special metal. The chilled discs in the end thrust bearing are 9″ diameter and run in an oil bath.

Gears

The gears are cast American gear metal. Master gear is 36.75″ diameter 1.15″ pitch 5.5″ face. Pinion is 6.25″ diameter. Gear ratio 6 to 1.

Shell

The pug mill shell or tub is cast in halves, carefully planed and securely bolted. Length 4′.

Knives

The pug shaft is fitted with 8 double blade tempering knives varying in length to conform to the taper of the pugging chamber. The blades are 3.5″ wide and each knife will occupy a space of 5″ on the shaft.

Driving Pulley

The machine is fitted with a friction clutch driving pulley 36″ diameter 8″ face.

Speed

The speed of the driving pulley should be 150 R.P.M., dependent on capacity desired and character of the work.

Power

The power required to drive this mill will vary from 20 to 30 H.P. according to capacity and character of material.

Weight

6,800 pounds.

DIMENSIONS

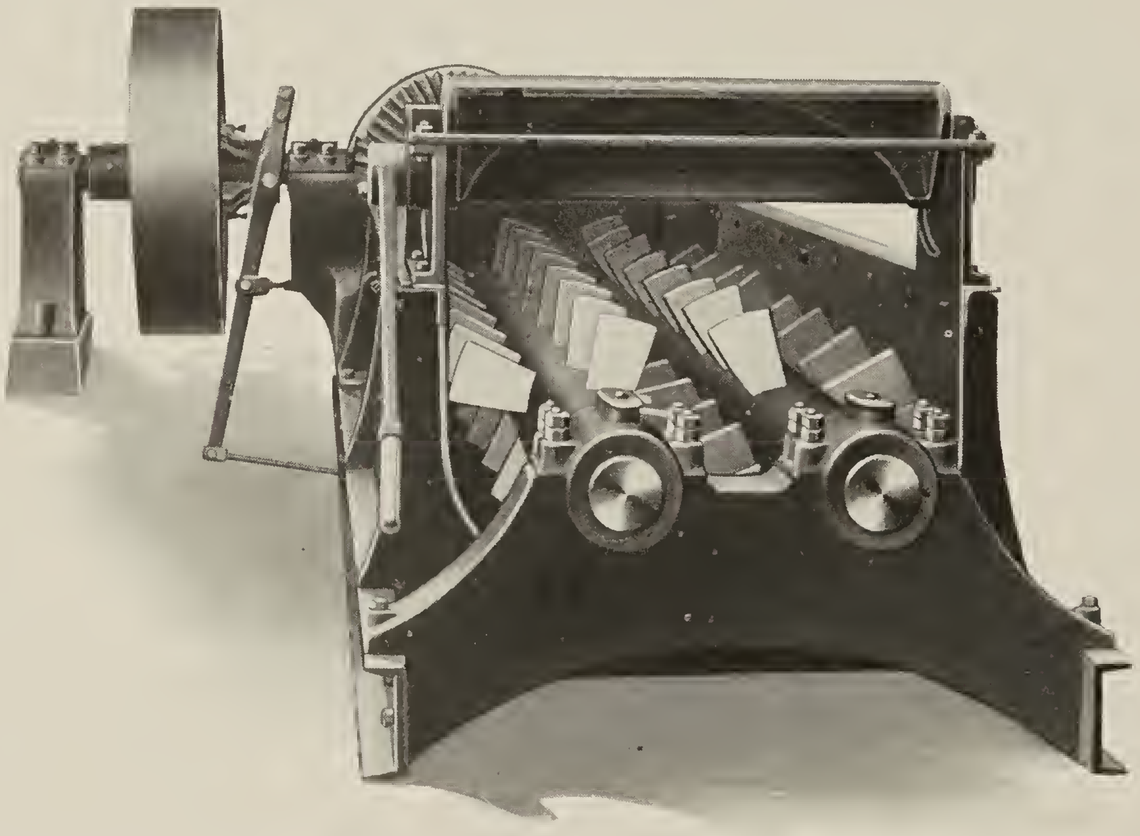
Length over all	10′ 9″
Width	5′ 6″
Height	3′ 11″
Height from top of floor to top of pug shell	2′ 5″
Length from center line of driving pulley to discharge end	9′ 1″

* * *

American No. 247 Double Shaft Clay Feeder and Mixer

THIS machine is designed for preparing and feeding plastic clay. As a feeder it forms the bottom of a clay storage bin and will discharge the material at a uniform rate determined by the speed at which the pulley is driven, by the pitch at which the knives are set and by the position of the adjustable gate which regulates the final control.

It may also be used to an advantage as a double shaft pug mill, in which case the clay bin and the gate are omitted. The standard machine which is always furnished unless otherwise specified, is bevel geared with the driving pulley on the right hand side as shown in the illustration. Driving pulley may be placed on the left hand side if so specified. The machine may also be built spur geared when ordered. The standard machine discharges the material at the end of the mixing chamber opposite the driving gears, but the machine may be built so as to discharge the material between the mixing chamber and the gear frame when so specified.



RATED CAPACITY PER HOUR

Building Brick, 3,500 to 5,000 per hour.

Capacity is governed by speed at which the pulley is driven, nature and character of the clay, and the position of the adjustable discharge gate.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearings.

Shafts

The mixing shafts are hammered steel 6½″ diameter. The driving shaft is 2½″ diameter. The intermediate shaft is 3″ diameter.

Bearings

The bearings on the mixing shafts at the forward end are 7″ long. At the gear end the bearings are of the marine type end thrust 10″ long. Pulley shaft bearings are 5″ and 7″. Intermediate shaft bearings 7″ long.

Gears

Gears on the mixing shaft are cast steel 1¾″ pitch, 6″ face, 14″ diameter; ratio 1 to 1. Intermediate gears are cast American gear metal, 1½″ pitch, 5½″ face. Master gear 25⅞″ diameter, pinion 7½″ diameter; ratio

3.6 to 1. Bevel gears are cast American gear metal 1½″ pitch, 4″ face, bevel gear 22″ diameter. Pinion 7¼″ diameter; ratio 3 to 1.

Knives
The knives in the mixing shafts are hammered steel inserted and secured by keys. 64 knives required for both mixing shafts.

Shell
The shell forming the mixing chamber is 8′ long 31″ wide, made of steel plate ¼″ thick, reinforced on the edges with angle iron.

Driving Pulley
The bevel geared machine is furnished with a friction clutch driving pulley 36″ diameter, 8½″ face. The spur geared machine is furnished with friction clutch driving pulley 48″ diameter, 8½″ face.

Speed
Speed of driving pulley on bevel geared machine 100 to 250 R.P.M. On spur geared machine 35 to 90 R.P.M. according to capacity desired and character of work.

Power
Power required to operate this machine will vary from 5 H.P. to 10 H.P. when the machine is used as a feeder and from 10 H.P. to 20 H.P. when the machine is used as a pug mill, depending upon the capacity required and character of material used.

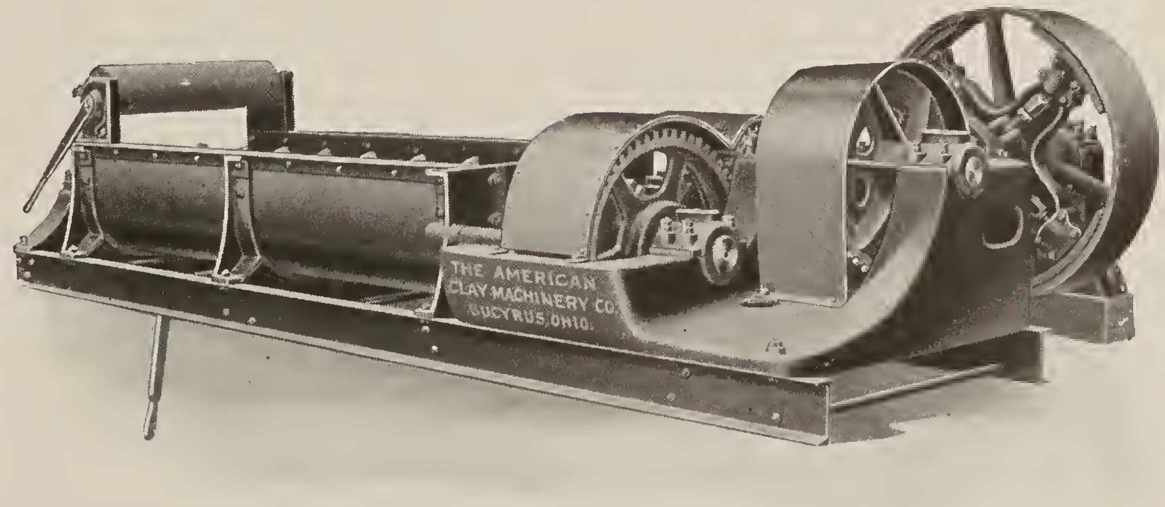
Weight
7,250 pounds.

DIMENSIONS OF BEVEL GEARED MACHINE

Length over all	14′	10″
Length of sills	14′	8″
Length from center of driving shaft to end of shell	3′	7″
Length of shell	8′	
Width over all	6′	6″
Width of sills	3′	5″
Width from center of driving pulley to center of mixing chamber	3′	1½″
Height over all	3′	6″
Height to top of shell	1′	11½″
Height to center of driving shaft	1′	11½″
Height to center of machine	1′	2½″

DIMENSIONS OF SPUR GEARED MACHINE

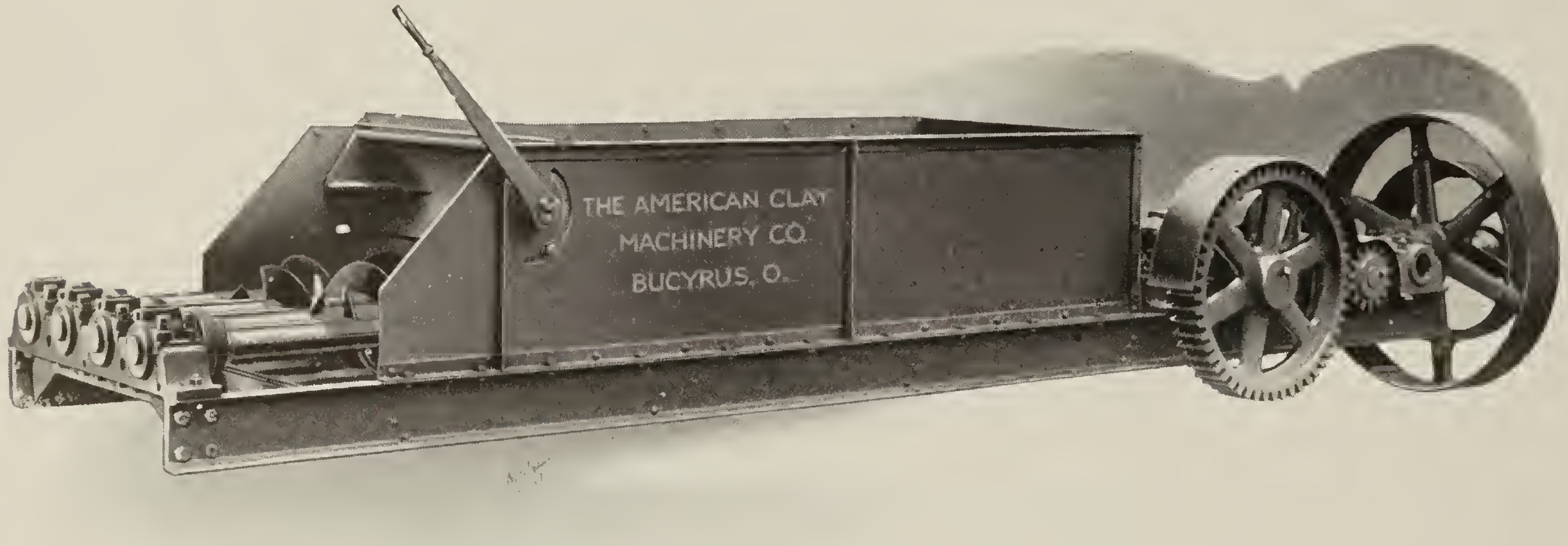
Length over all	17′	6″
Length of sills	14′	8″
Length from center of driving pulley to end of shell	5′	10½″
Length of shell	8′	
Width over all	4′	7″
Width of sills	3′	5″
Width from center of driving shaft to center of mixing chamber		7″
Height over all	4′	
Height to top of shell	1′	11½″
Height to center of driving shaft	1′	11½″
Height to center of machine	1′	2½″



American No. 247 Double Shaft Clay Feeder and Mixer

American No. 274 and No. 316 Spiral Clay Feeders

THE American No. 274 Spiral Clay Feeder is designed for handling plastic clay direct from the bank, or for handling material that has been ground and screened. When installed in a plant, it should form the bottom of a storage bin, and will discharge the material continuously at a uniform rate. The American No. 316 Spiral Clay Feeder is identical in construction, with the exception that the No. 274 Spiral Clay Feeder is the pushing type, arranged to push the material forward, away from the driving end and discharge it at the forward end of the hopper, while the No. 316 Spiral Clay Feeder is arranged to pull the material and discharge it between the hopper and the gear frame. These machines are built with four shafts, upon each of which is a spiral or screw; the shafts turn toward the center of the machine, making it impossible for the material to bridge over and hang in the storage bin.



RATED CAPACITY PER HOUR

Building Brick, 2,000 to 4,000 per hour on plastic clay, or 5,000 to 10,000 per hour on ground and screened material.

Capacity is governed by speed at which the pulley is driven, nature and character of the clay, and the position of the adjustable discharge gate.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearings.

Shafts

The shafts are steel; pulley shafts, intermediate shaft and bevel-gear shaft are $2\frac{1}{2}''$ diameter, miter-gear shafts are 3″ diameter, and the shafts carrying the spirals or screws are $2\frac{15}{16}''$ diameter.

Bearings

The machine is fitted with babbitted bearings. Bearings on the driving shaft, intermediate shafts and miter gear shaft are 6″ long. The bearings for the screw shaft are $4\frac{3}{4}''$ long.

These machines are built either spur geared or bevel geared, as may be specified. The spur gears or the bevel gears are made of cast iron American gear metal. The miter gears are made of cast steel. Bevel gears 2½″ pitch, 3½″ face, 21″ and 5⅜″ diameter, ratio 4 to 1. Spur gears, 1½″ pitch, 5″ face, 25⅞″ and 7⅛″ diameter, ratio 3.6 to 1. The miter gears are 1¼″ pitch, 3″ face, 8″ diameter.

Hopper

The hopper or shell of the machine is made of steel sheets, well riveted together. These sheets are 3/16″ thick and the shell is 7′ long, 38″ wide, 23″ deep.

Screws

The screws form a continuous spiral. They are made of steel plate and are 9″ diameter.

Driving Pulley

Machine is furnished with a friction-clutch driving pulley, 36″ diameter, 6½″ face.

Speed

Speed of the driving pulley is 70 R.P.M. This may be increased or decreased, according to the capacity required and the character of the work.

Power

Power required to operate this machine will vary from 5 H.P. to 10 H.P. according to the capacity and character of the material used.

Weight

4,660 pounds.

DIMENSIONS FOR BEVEL GEARED MACHINE

Length over all	16′	2″
Length of sills	14′	3″
Length from discharge end of hopper to center of driving pulley for No. 274 feeder	13′	3″
Length from discharge end of hopper to center of driving pulley for No. 316 feeder	6′	1¼″
Width over all	5′	3″
Width of sills	3′	6″
Height over all—above channels	2′	3½″
Height over all—below channels	0′	9½″
Height to top of hopper	2′	2½″
Height to center of machine	0′	9½″

DIMENSIONS FOR SPUR GEARED MACHINE

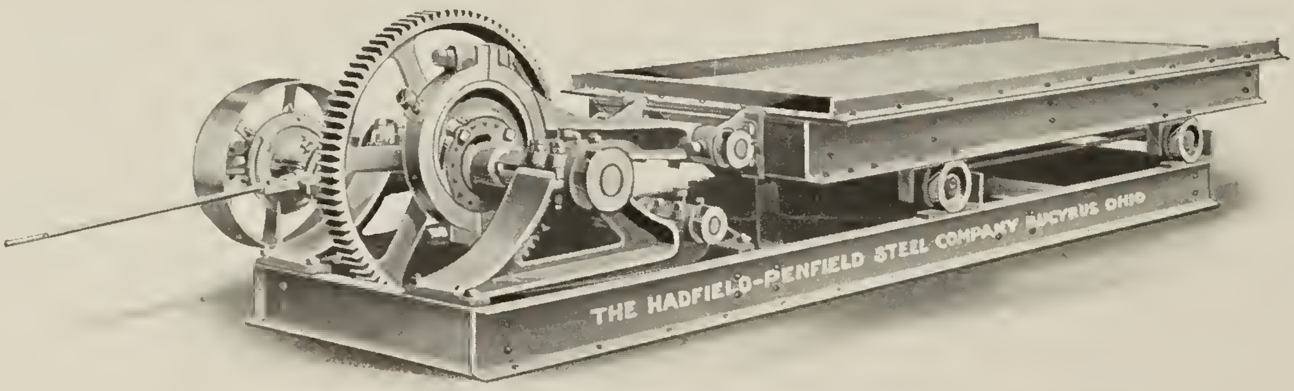
Length over all	15′	1″
Length of sills	14′	3″
Length from discharge end of hopper to center of driving pulley for No. 274 feeder	11′	10″
Length from discharge end of hopper to center of driving pulley for No. 316 feeder	4′	10″
Width over all	6′	6″
Width of sills	3′	6″
Height over all—above channels	2′	3½″
Height over all—below channels	0′	9½″
Height to top of hopper	2′	2½″
Height to center of machine	0′	9½″

American No. 459 Reciprocating Feeder

THE No. 459 Reciprocating Feeder is so designed that it may form the bottom of a hopper into which the material is dumped and from which it will be discharged at an even rate. Or it may be located under the floor of a storage bin in such a way that the reserve supply of material will form its own hopper. In this way a reserve supply of material is carried for use in case of interruption to the delivery of raw material and permits of continuous operation of the plant.

This machine is a typical "American" design in that it is simple, durable and efficient. The framework of both the stationary and reciprocating members are built up from structural steel riveted together. The gear frame and bearings are made from cast iron of heavy construction. Gears are of ample strength; shafting proportioned to the load with a high safety factor, eccentric is double permitting of adjustment of stroke from 0 to 8″.

Anti-friction rollers under reciprocating plate run on renewable tracks and require no lubrication. Bearings are lined with anti-friction metal and have a collar on each side. Lubrication is by means of grease cups, the grease forming a seal between the collars and bearings excluding dust.



American No. 459 Feeder Driving End

SPECIFICATIONS—SPUR-GEARED MACHINE

Length over all with plate in forward position	14′	1″
Length of sills	12′	5″
Length of plate	9′	
Center of drive shaft to discharge end	10′	5″
Width plate over all	4′	
Width plate working surface	3′	6″
Center of pulley to center of machine (Min.)	3′	7″
Can reduce minimum to 30″ at slight extra expense when necessary.		
Center of pulley to center of machine (Max.)	5′	8½″
Center of machine to center of outboard bearing	6′	8¼″
Center of machine to end of shaft	6′	8½″
Height over all	3′	
Height of sills		7″
Height to center of main shaft		18″
Height to drive shaft		18″
Height to top of plate		21¾″
Main gear—88T., 1¼″ pitch, 35″ pitch dia., 3½″ face.		
Pinion—14T. 5½″ pitch dia.		
Stroke adjustable	0	to 8″
Main shaft diameter		3½″
Driving shaft, diameter		2″

Pulley—Bucyrus Friction Clutch, 24″ diameter x 6″ face, may be located in either side.

Speed—100 R.P.M. for 16 strokes per minute. Shifter lever may be placed in any position radial from the driving shaft.

Weight iron work—3430 pounds. Woodwork not furnished.

SPECIFICATIONS—BEVEL GEARED MACHINE

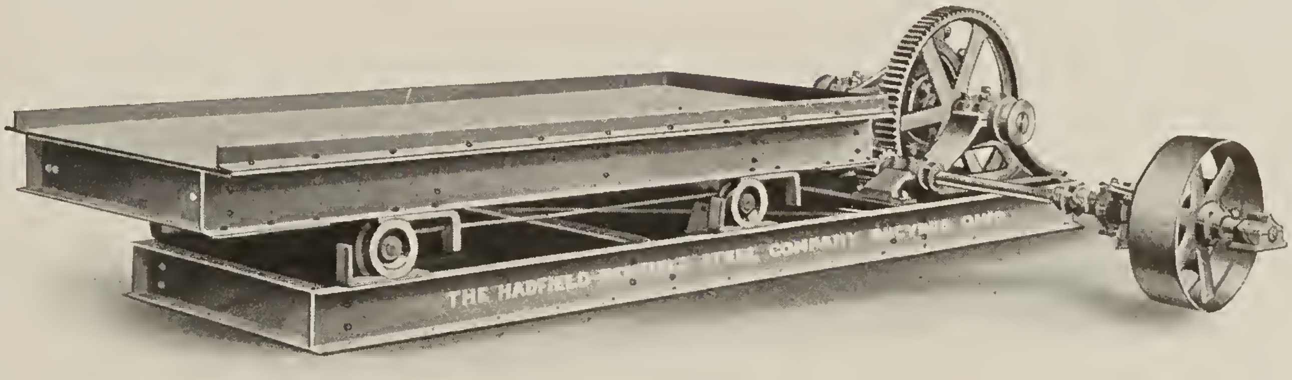
Length over all with plate in forward position	17′	6½″
Length of sills	12′	5″
Length of plate	9′	
Center of drive shaft to discharge end	10′	5″
Width of plate over all	4′	
Width of plate working surface	3′	6″
Center of pulley to center of machine		19″
Width over all	4′	7″
Height to top of sill		7″
Height to center of shaft		18″
Height to top of plate		21¾″
Height over all	3′	
Main gear—90T., 1¼″ pitch, 35¾″ pitch dia., 3½″ face.		
Pinion—14 T		5½″ dia.
Main shaft, diameter		3½″
Drive shaft, diameter		2″

Pulley—Bucyrus friction clutch pulley —24″ dia., 6″ face.

Speed—100 R.P.M. for 16 strokes per minute.

Position of shifter adjustable radially.

Weight iron work—3,500 pounds. Woodwork not furnished.



American No. 459 Feeder Discharge End

American Granulators

AMERICAN Granulators are used for preparing plastic clay and feeding it to the crushing rolls in a properly prepared condition and at a constant and uniform rate.

A hopper should be built above the granulator large enough to store one or more carloads of material, to provide against interruption in the hauling from the bank.

The American Granulator reduces the labor of feeding the clay to the crusher. The knives are adjustable as to pitch and may be set at the proper angle to deliver the quantity of material for each individual plant installation and furnish a uniform supply of clay, which means practically constant and dependable daily output.

The knife shaft is round and is of sufficient diameter to insure against breakage from crystallization, and soon takes a high polish, consuming but little power from friction, and will wear for years. The sockets for the knives and keys are cast in the shaft, thus toughening the metal and obtaining the strongest casting it is possible to make.

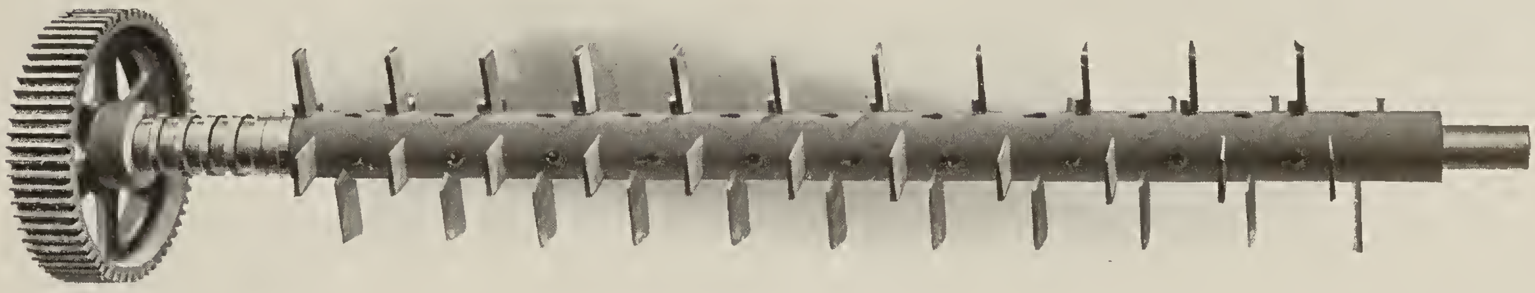
American Granulators are built either bevel geared or spur geared, and profiting by our experience in the construction of a line of strictly modern machines, we use but a single pair of gears, one spur or bevel gear, as the case may be, and one pinion, completely enclosing them in such a way that they run in a bath of oil in a dirt-proof case.

The bearings of American Granulators are ring oiling, excepting the end thrust on the main shaft, which is a "marine" type. The advantage of this type of bearing is that it will take the thrust from either direction. The machines are readily convertible, so as to discharge the material at either end of the shell, that is, between the gear frame and the shell or at the opposite end, as may be most convenient. The arrangement of the knives is such that they may be reversed and run in the opposite direction.

The shaft is the same for all American Granulators of a given size, regardless of the direction of motion or whether spur or bevel geared.

While the American Granulators are convertible as to direction of discharge and direction of motion, in ordering it is advisable that we be informed as to these points to enable us to ship the machine arranged to suit requirements. Each machine is erected complete in our factory and thoroughly inspected before shipment.

American Granulator Shaft



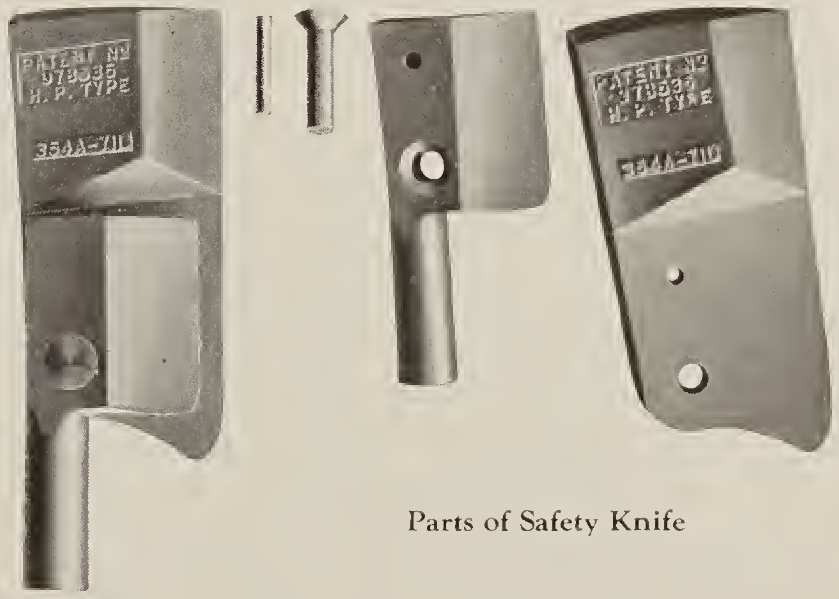
American Granulator Shaft

The round shaft and adjustable knives as incorporated in our standard line of Granulators contribute to greater efficiency.

The shaft is large in diameter and is free from vibrations, reducing the tendency to crystallize. In service, they become polished, so that the full area of the tempering chamber is effective entirely up to the shaft. The adjustable knife feature makes it possible to obtain the maximum amount of mixing and the proper quantity of material at all times. The method of keying the knives in the shaft provides a safe method of securing the blade to the shaft and at the same time a convenient method of adjustment for pitch and for renewal.

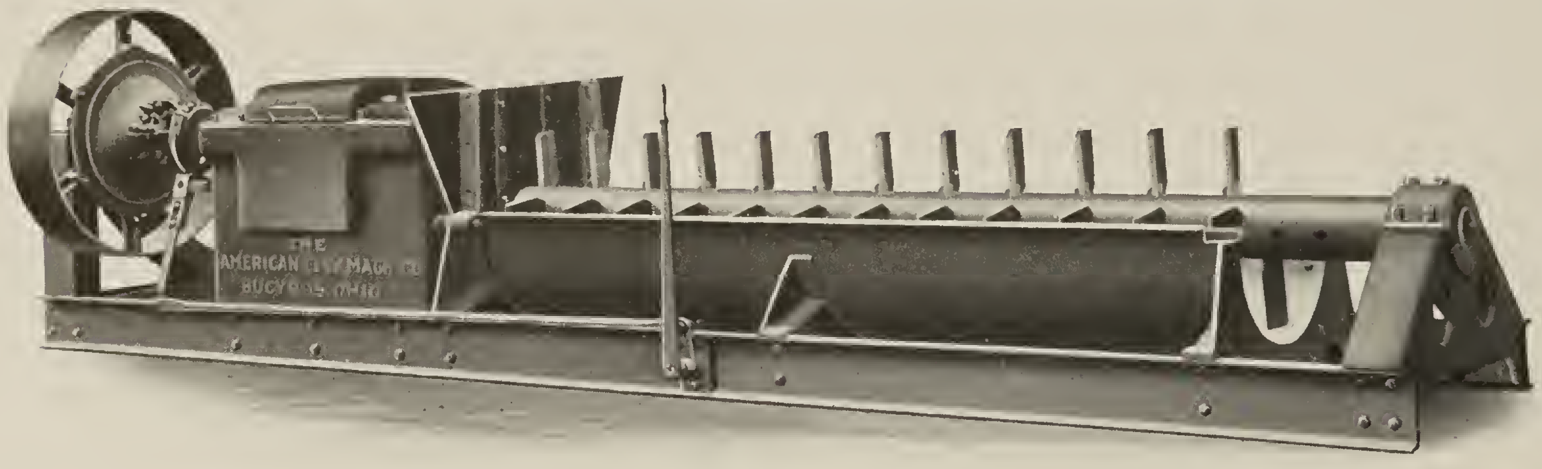
American Safety Granulator Knife

THIS knife consists of a blade made from chilled cast iron. It is loosely riveted to a steel shank with a shear pin for holding it in working position. Should a large stone become caught or wedged between the shell and the blade, the pin will shear off permitting the blade to fold back and clear the stone or other obstruction. At quitting time the blade may be restored to working position and a new shear pin inserted. It is not necessary to shut down for a broken shear pin. These knives are made right and left hand. The illustration shows a left hand knife.



Parts of Safety Knife

American Nos. 354 and No. 355 Granulators



American No. 354 Granulator
(Pushing Type, Weight 15,450 lbs.)

THESE are single-geared, single-shaft granulators. The design of the machine is such as to permit driving it in either direction and arranging it for either the pushing or the pulling type. The two machines are identical in construction with the exception that the No. 354 Granulator is the pushing type, arranged to push the material forward, away from the driving end and discharge at the forward end of the shell, while the No. 355 Granulator is arranged to pull the material and discharge between the gear frame and the shell.

RATED CAPACITY PER HOUR

Building Brick, 5,000 to 15,000 per hour. Capacity is governed by speed at which the pulley is driven, angle at which the knives are set, nature and character of clay, and by management.

SPECIFICATIONS

Base

The base of this machine is a heavy one-piece casting carrying the shaft bearing and forming an oil reservoir for the gears.

Shafts

The mixing shaft is 8″ diameter, and arranged for inserting the mixing knives, which are secured in position by steel keys. The pulley shaft is steel, 4″ diameter.

Bearings

The machine is fitted with ring oiling babbitted bearings. The bearing on the driving end of the mixing shaft is of the marine type for end thrust and is 18″ long. The bearing on the forward end of this shaft is 9$\frac{1}{2}$″ long. Bearings on the driving shaft are 18″ and 14″ long.

Gears on Nos. 354 and 355 Granulators

The gears are cast American gear metal 2″ pitch, 10″ face. Master gear is 38$\frac{7}{8}$″ diameter, driving pinion is 9$\frac{5}{8}$″ diameter, ratio 4 to 1. They are incased and run in a bath of oil.

Gears on Nos. 357 and 358 Bevel-Geared Granulators

The gears are cast American gear metal 2$\frac{1}{2}$″ pitch, 10″ face. Master gear is 45$\frac{1}{2}$″ diameter, driving pinion is 11$\frac{1}{4}$″ diameter, ratio 4 to 1. They are incased and run in a bath of oil.

Shell

The shell is made from one-piece of tank steel $\frac{15}{16}$″ thick. The mixing chamber is 12′ long, 32″ wide and 16″ deep.

Knives

The mixing knives are made in two pieces. They are inserted in the mixing shaft and secured by steel keys, the arrangement being such as to permit setting the knives at any angle required for thorough mixing. The blades are 10″ long and 5½″ wide. Fifty-two knives are required for the mixing shaft.

Driving Pulley

The machine is furnished with a Bucyrus friction-clutch driving pulley 48″ diameter, 12″ face.

Speed

The speed of the driving pulley should be 60 to 120 R.P.M. This may be increased or decreased according to the capacity desired and the character of the work.

Power

Power required to operate this machine will vary from 35 H.P. to 60 H.P., according to capacity, character of clay and quality of mixing required.

DIMENSIONS

Nos. 354 and No. 355 Granulators

Length over all	23′	6″
Length of Sills	23′	6″
Width over all	6′	
Width of Sills	4′	4″
Height over all	5′	5½″
Height to top of Shell	2′	3″
Height to center of Driving Pulley	3′	5½″
Height to center of Mixing Shaft	2′	1″
Length from Discharge end to center of Pulley on No. 354 Granulator	19′	5½″
Length from Discharge end to center of Pulley on No. 355 Granulator	8′	11″
Space for Discharge		17″
Weight	15,450 lbs.	

DIMENSIONS

No. 357 and No. 358 Bevel-Geared Granulators

Length over all	19′	6″
Length of Sills	18′	6″
Width over all	10′	6″
Width of Sills	4′	4″
Height over all	4′	2½″
Height to top of Shell		27″
Height to center of Driving Pulley		25″
Height to center of Mixing Shaft		25″
Length from Discharge end to center of Pulley Shaft on No. 357 Granulator	15′	1⅜″
Length from Discharge end to center of Pulley Shaft on No. 358 Granulator	4′	6⅜″
Distance from center of Driving Pulley to center of Machine	5′	5½″
Space for Discharge		17″
Weight	13,500 lbs.	

ARTISTIC BRICKWORK CREATES BEAUTIFUL EFFECTS

Small homes like this can be made things of beauty when they are executed in the artistic brick effects that have become so popular in recent years.

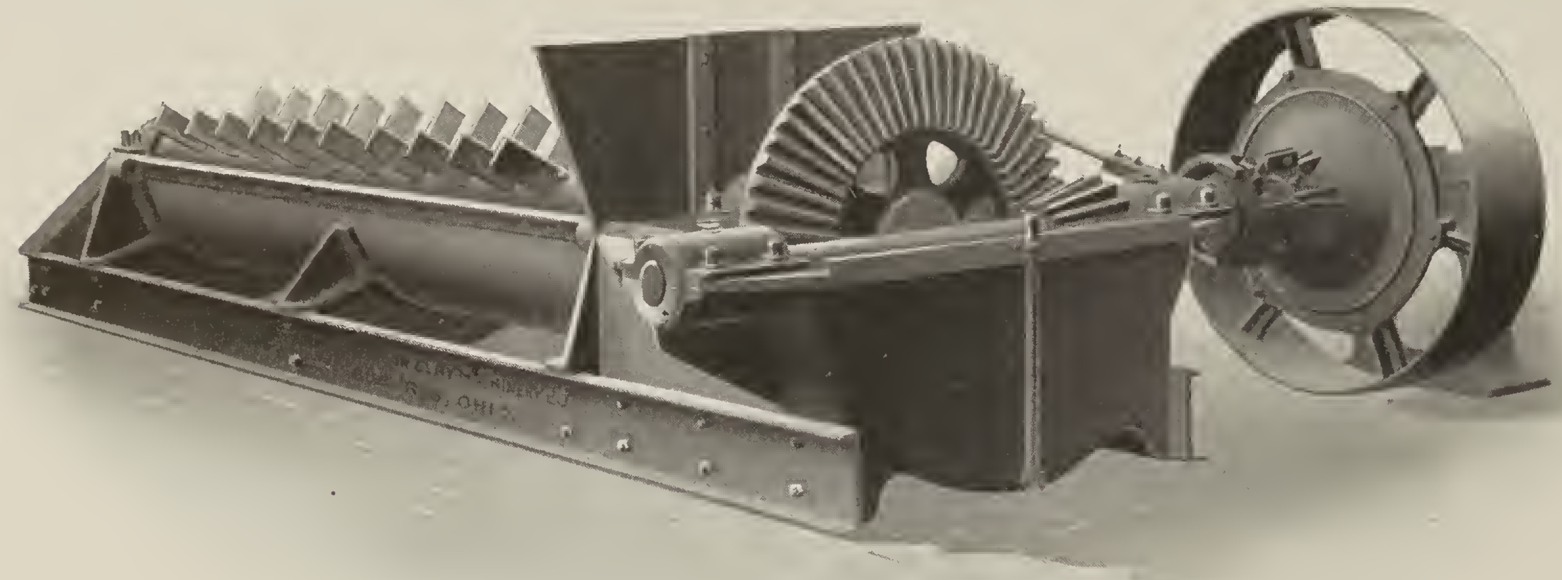
American No. 357 and No. 358 Bevel-Geared Granulators

The two machines are identical in construction with the exception that the No. 357 Granulator is the pushing type, while the No. 358 Granulator is the pulling type.

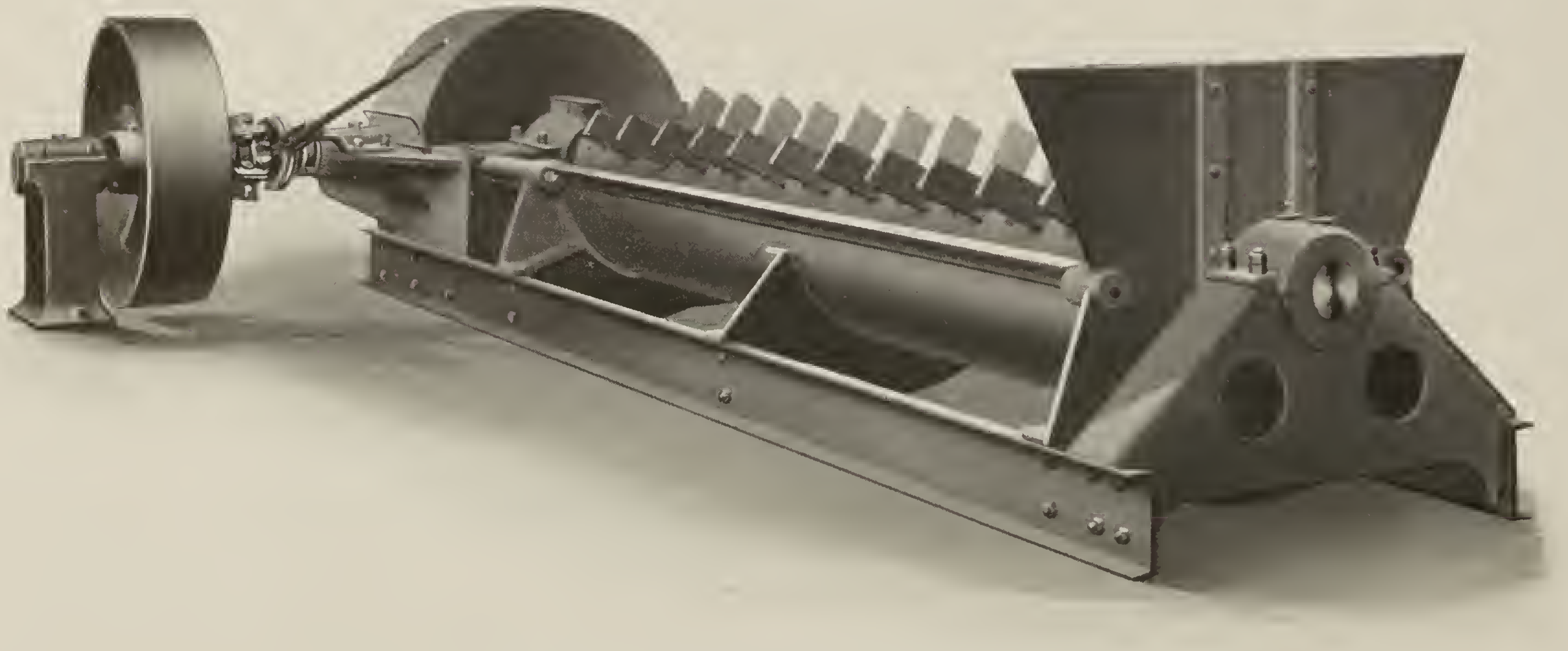
RATED CAPACITY PER HOUR

Building Brick, 5,000 to 15,000 per hour.

Capacity is governed by speed at which the pulley is driven, angle at which the knives are set, nature and character of clay, and by management.



American No. 357 Bevel-Geared Granulator
(Gear Cover Removed) Pushing Type



American No. 358 Bevel-Geared Granulator
Pulling Type, Weight 13,500 pounds

WARCO
BUCYRUS
OHIO

Grinder Department

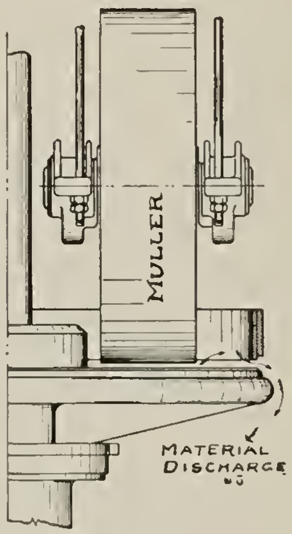
American Grinders

THE AMERICAN Grinder is built by the same organization that for years has built AMERICAN Dry Pans and Wet Pans—famous throughout the industry for their staunchness and reliability. With this background of long experience it is only natural that the determination to build a grinder of greater capacity, efficiency and economy should result in a successful, low cost producer.

The AMERICAN Grinder is an engineering triumph any way you look at it, in construction or in performance. It is massive—reducing the necessity for repairs and maintenance to an absolute minimum. Shafting, bearings and gears are extra large. The heavy mullers are held independently of each other by means of heavy hinged yokes and are supported from above in such a way as to make the clearance between them and the grinding base adjustable. The grinding base is similar in design to that of a dry pan—except that no screen plates are used. The ground material is discharged from the grinding base by centrifugal force—a feature made possible by the increased speed of operation.

This is the Difference Between Grinding on Dry Pans with Screen Plates, and Grinding in the American Way

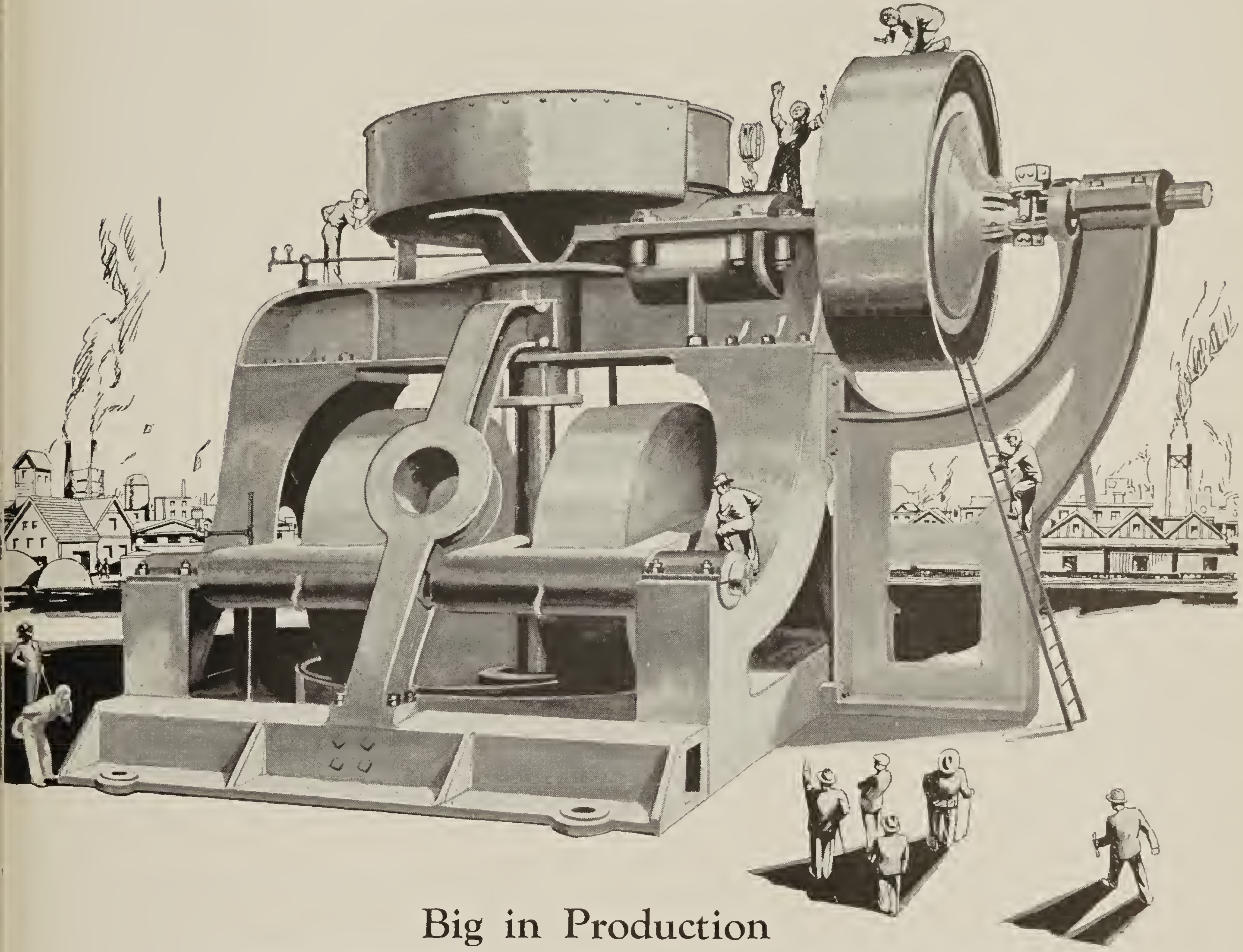
Moist material will *clog* screen plates—hence such material is very difficult to grind on dry pans. In the American Grinder, the opening (see diagram) between the revolving grinding base and the adjustable stationary rim serves as the screen. Moist material does not clog this opening. The discharge is positive, due to centrifugal force. This feature makes it possible for even those clay workers who handle damp material, to use the money-saving American Grinder.



W. A. RIDDELL COMPANY

BUCYRUS WARCO BUCYRUS OHIO OHIO

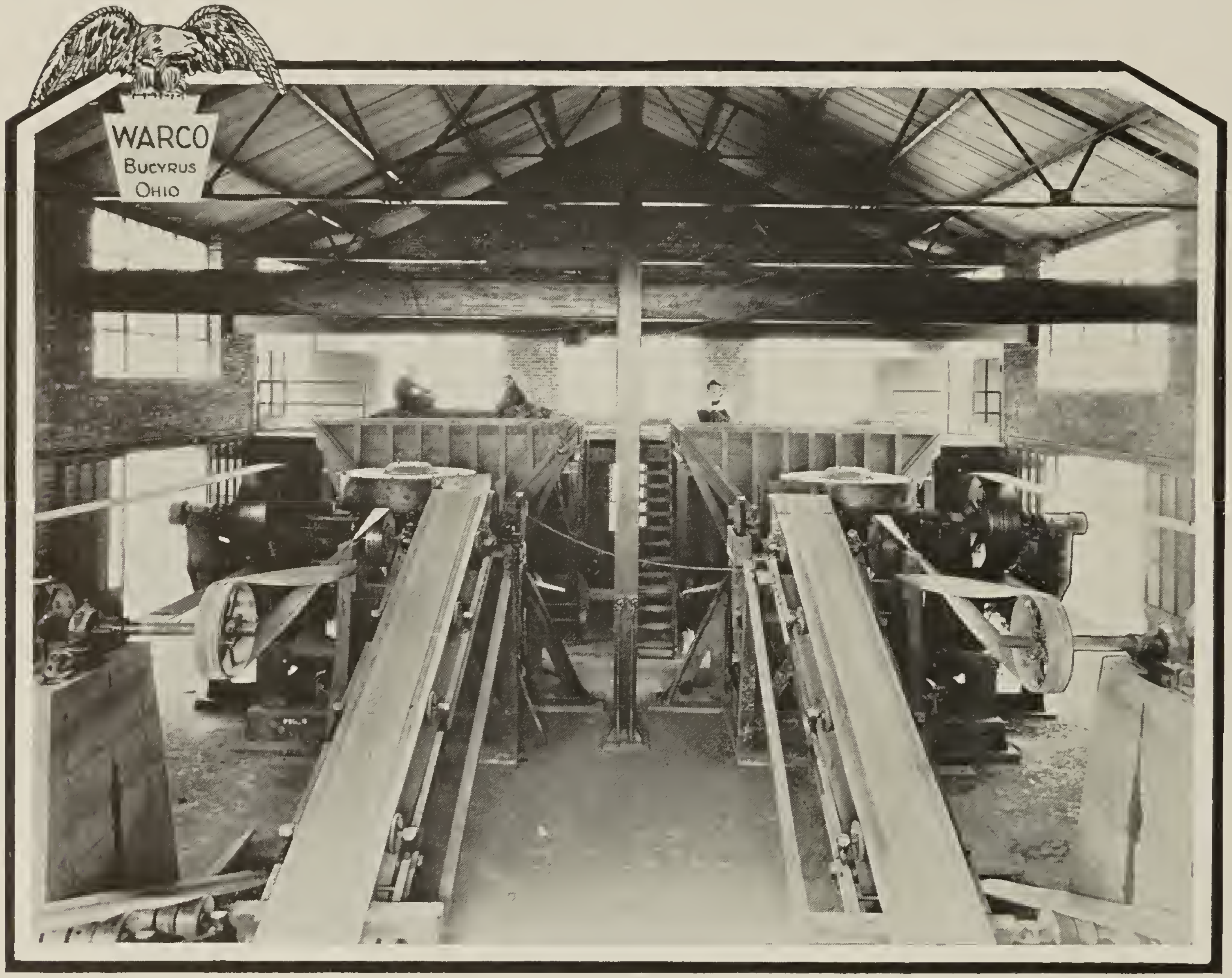
American No. 384 Grinder



Big in Production

AMERICAN Grinders are BIG in Production yet they occupy practically the same floor space of ordinary pans. Larger and heavier mullers. Faster speed and NO SCREEN PLATES make it easy for American Grinders to produce an unbelievable tonnage of well ground material. Even moist clay can be successfully ground in these Grinders.

Judged by output and saving in Time, Floor Space, Power, Labor and Repairs the American Grinder is the Greatest Cost Cutting unit ever given the Clay Trade.



Two American Grinders at Kingsport, Tenn.

IN 1927 the Kingsport Brick Corporation discarded their dry pans and installed two American No. 384 Grinders in their plant at Kingsport, Tenn. On account of wet material they had been compelled to operate their dry pans 12 to 16 hours a day to grind their capacity. The Grinders, handling the same material, are giving them more capacity and operating 8 hours per day.

SAVING TIME AND SAVING MONEY

They are using 4 American No. 497 Piano Wire Screens with each Grinder. These Screens are set on the same floor level as the Grinders and the material is delivered to the Screens by a conveyer. Tailings are returned to the Grinder by the same method. This makes a very convenient and practical installation.

American No. 384 Grinder

THE American No. 384 Grinder is an unusual machine. It is a complete revolution in grinding machinery as adapted to clay products plants and is away beyond any capacity heretofore attempted for a single grinding machine. It originated with the established line of dry and wet pans manufactured for years by this company and was the outgrowth of our experience in pan building. The demand for a pan or grinder of greater capacity and requiring less labor cost, furnished the incentive and as usual this company took an advanced position in bringing out what some of the larger manufacturers sought in improved machinery. The American No. 384 Grinder is the result. It isn't a whole lot bigger than other pans, it isn't more intricate, it isn't troublesome or power consuming. It is just a departure from some of the features of other types of pans with a view of doing a lot more work without a lot more power. It combines in one grinder the possible output of five ordinary pans. This machine may be too big for small plants but for larger outputs it will prove more than economy and is proving a prime favorite. This American No. 384 Grinder isn't new and untried because it has been going through the testing out process for some years on several big plants and during the past several years many of them have been installed because of their cost reducing qualities. Those who have need of this type and capacity grinder can easily see them in operation and determine for yourself the cost cutting benefits. More production with less room and less labor, less trouble and less expense are key notes of this big grinder. If that interests you there isn't a reason in the world why you shouldn't take advantage of the big saving features of this big grinder.

GENERAL SPECIFICATIONS

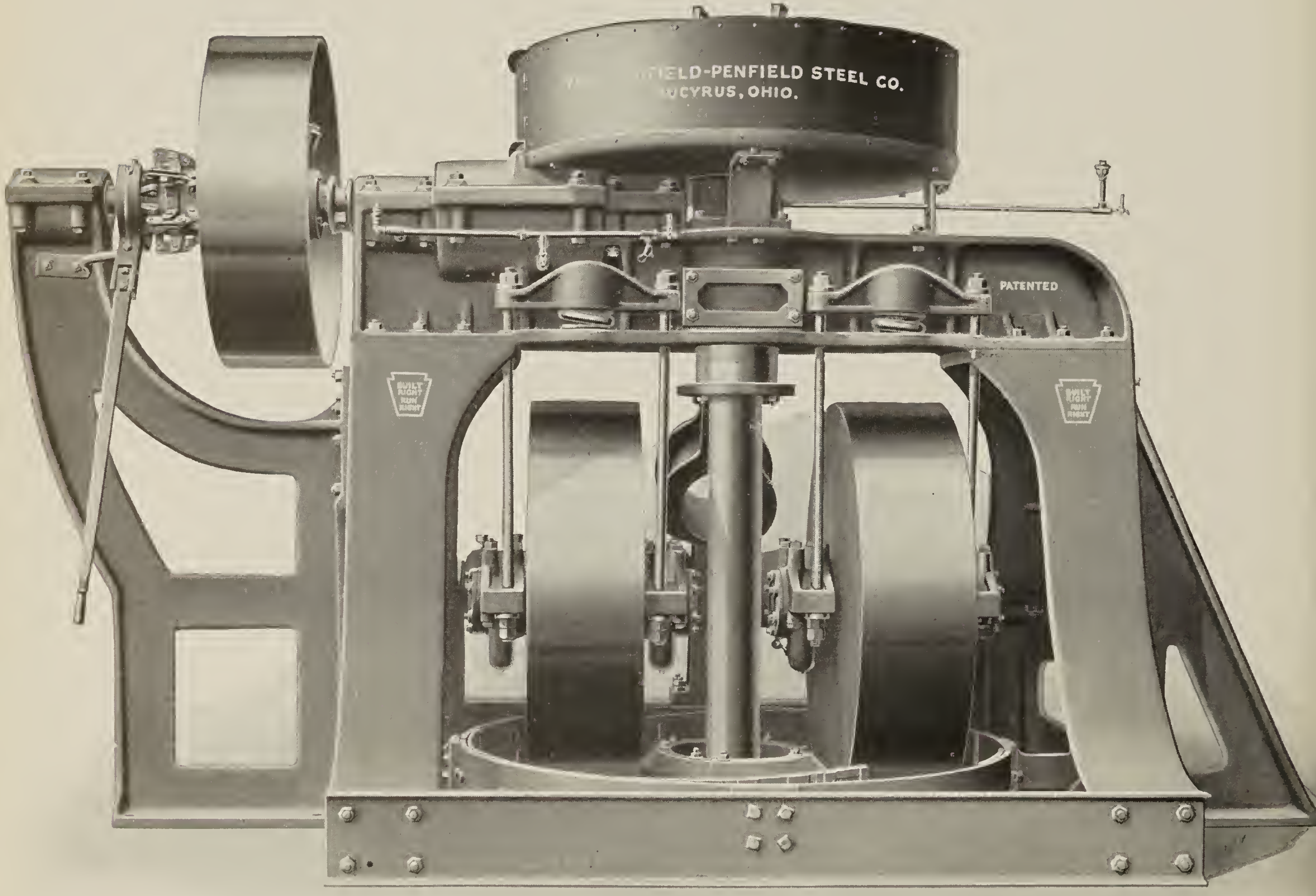
This machine is designed for crushing and grinding hard clay, shale and similar material preparatory to the manufacture of brick and other clay products.

In appearance it resembles the dry pan, which is the machine that has been used extensively in the clay industry for many years. The operation of the machine, however, is different from a dry pan in the fact that there are no screen plates in the bottom of the machine.

The grinder is equipped with heavy mullers and a heavy, substantial grinding base similar in design and construction to the ordinary dry pan. The rim of the grinder, however, is stationary and is set so as to leave a space between the revolving base and the underside of the rim so that the material after passing under the mullers and being crushed, will discharge by centrifugal force off of the revolving base and through the opening under the stationary rim.

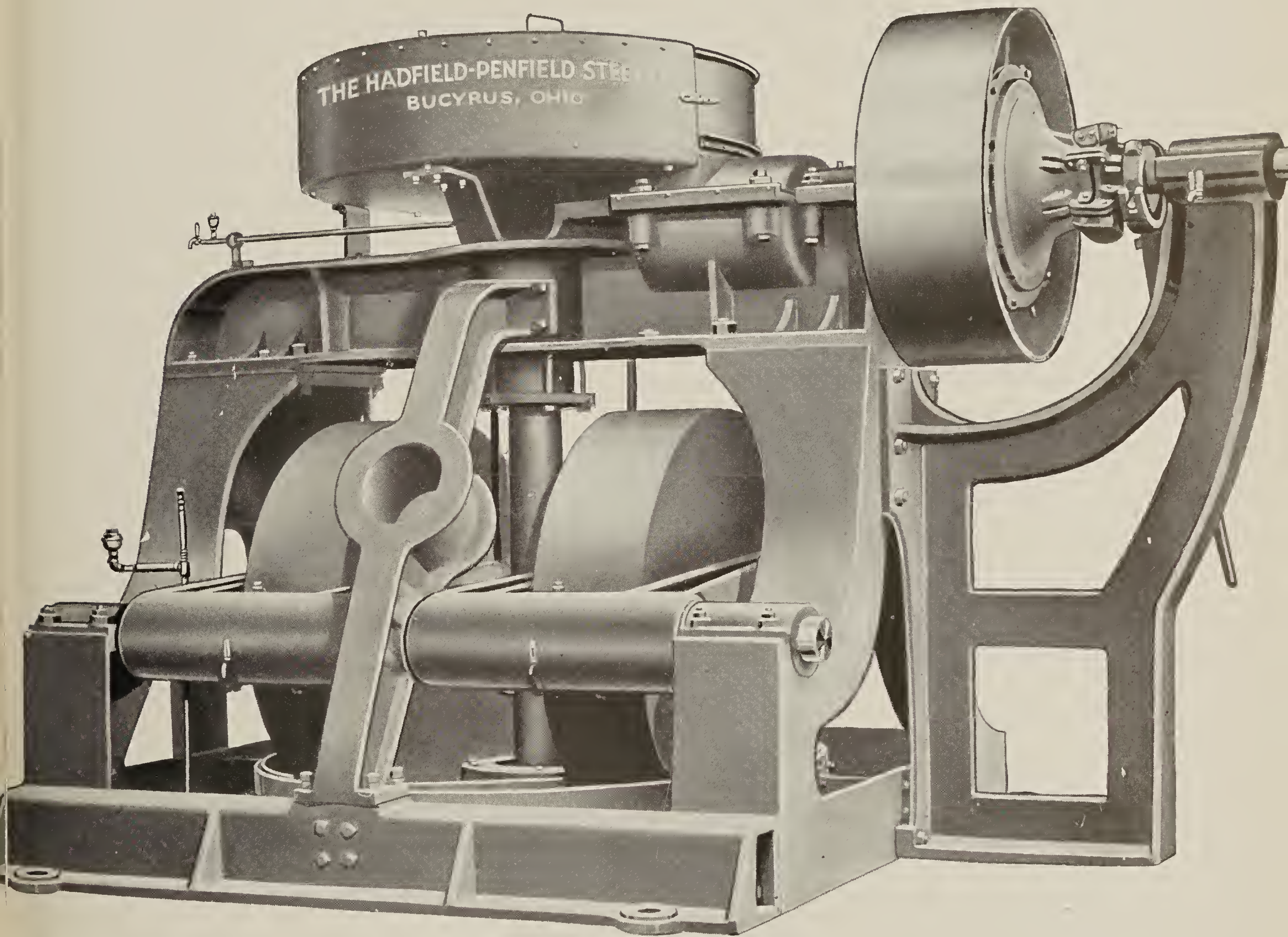
The rim is provided with liners which are adjustable to regulate the opening for the escape of the crushed material and this regulates the degree of fineness to which the material is ground. The material, after being discharged from the grinder, passes by gravity to the elevator and is delivered to a screen in the usual manner, the tailings from the screen returning by gravity to the grinder. By eliminating the screen plates, we greatly reduce the power required to operate and also reduce the cost of maintenance and at the same time, greatly increase the capacity of the machine, as it is possible to operate the grinding members at a much higher speed.

The power required to operate two Standard 9′ dry pans is sufficient to operate one No. 384 grinder. The grinder would occupy a space practically equal to two 9′ pans and will grind as much material as can usually be ground by four or five Standard 9′ pans. Therefore, it will be readily seen that the single unit grinder is much more economical in power consumption, cost of maintenance and cost of installation.



(Patented)

American No. 384 Grinder (Front View)



American No. 384 Grinder (Rear View)

We have had this particular type of grinder in use for more than ten years and the principle has been fully developed and proven to be thoroughly practical and the economies have been thoroughly established.

Will handle clay too wet to go through screens on an ordinary dry pan and will not clog up as the screen plates would.

The Standard American No. 384 grinder is built for belt drive but the machine may be arranged for motor drive when required.

SPECIFICATIONS

Capacity

The capacity of the No. 384 grinder is, of course, governed by the nature and condition of the material being ground but it has been demonstrated that the capacity is equal to four of our Standard 9′ dry pans which would amount to from 40 to 75 tons of material per hour under ordinary conditions.

Frame

The frame consists of two heavy A-shaped end frames with a heavy cast iron top cross frame and one channel and one cast iron cross tie at the bottom. The bolt holes are drilled and bolts are made for a driving fit. Two heavy cast iron side braces are provided to enable operating the machine at a high speed without vibration. Bolts have lock nuts.

Shafts

The vertical shaft is 8″ diameter, forged from a steel billet, the collar on the shaft supporting the grinding base is forged on the shaft and is 14″ diameter. The driving shaft is forged steel 4″ diameter. Muller shafts are forged steel 6″ diameter.

Bearings

Bearings are all bored and bushed on the interchangeable system for renewals. They all have individual oil reservoirs with ample provision for supplying lubrication to all bearing surfaces. The vertical bearing in the top cross frame is packed to retain the oil. The muller shaft bearings are provided with bronze bushings. Each bearing is supplied with an oil indicator showing the oil level in the reservoir and any bearing may be oiled from one side of the machine while the machine is running and without going below the floor.

Step Bearing

The step bearing is self-aligning and operates in a casting which will hold several gallons of oil. The bearing consists of three members. The lower member is a chilled disc, convex so as to permit self-alignment. The upper surface of this member is ground true and provided with curved oil grooves to permit a free circulation of oil. This member is stationary and does not revolve with the machine. The upper member is a chilled disc, ground true and provided with spiral oil grooves. This member turns with the vertical shaft. Between these two discs is a phosphor bronze disc provided to take up the wear. This disc is free to revolve or to remain idle and the grooves in the chilled discs provide oil for lubricating the bronze disc.

The step casting consists of a heavy base, one side of which is removable to permit access to the working parts of the step. Joints are machined and a lead gasket prevents the escape of the oil. Above the bearing proper is a sleeve around the shaft which serves to maintain perfect alignment of the shaft. This sleeve is made on the ball and socket type and is split so that it is readily removable. All interior parts of the step are readily accessible by drawing off the oil and removing the side cover plate.

I-Beams

The setting for the grinder provides for the step to be mounted on three 12″ I-beams and these beams are furnished with the grinder.

Gears

The large bevel gear is cast steel with cut teeth. The diameter is 59″, 5″ face, 1¼ diametrical pitch. The driving pinion is made from a steel forging with cut teeth, 15″ diameter, 5″ face. The gears are completely covered to exclude dust and run in a bath of oil.

Base

The base is a one-piece casting keyed to the vertical shaft and supported by a heavy collar forged on the shaft. This base carries the muller plates, which are renewable.

Muller Plates

The muller plates are made of chilled cast iron and are machined on the bottom to insure a perfect bearing on the revolving base.

Mullers

The mullers are 60″ diameter, 16″ face. Muller tires are 5″ thick, cast in chills so that the grinding face has a chilled surface. Each muller will weigh 6 tons. Mullers are keyed to the 6″ muller shaft and the shaft revolves in bearings that are provided with bronze bushings. Mullers are supported independently of each other by means of hinged yokes and are supported from above in such a manner as to make them adjustable to regulate the distance between mullers and the grinding base. It is customary to hang the mullers so that there will be a clearance of ¼″ between the muller and the grinding base, thus greatly reducing the power required to start the machine when empty.

The suspended mullers are supported by very heavy short springs. In action they reduce the load of starting the grinder and are out of service when there is any appreciable amount of material under the mullers, therefore they do not decrease the output of ground material.

Muller Yokes

The yokes for the mullers are hinged on a shaft along one side of the pan, leaving the opposite side clear for feeding the material into the machine. These yokes are heavy steel castings of ample strength to keep the mullers rigidly in place.

Driving Pulley

The machine is equipped with a Bucyrus type friction clutch pulley 48″ diameter, 14″ face and is usually operated at a speed of 195 R.P.M. which operates the grinding base at 50 R.P.M.

Weight

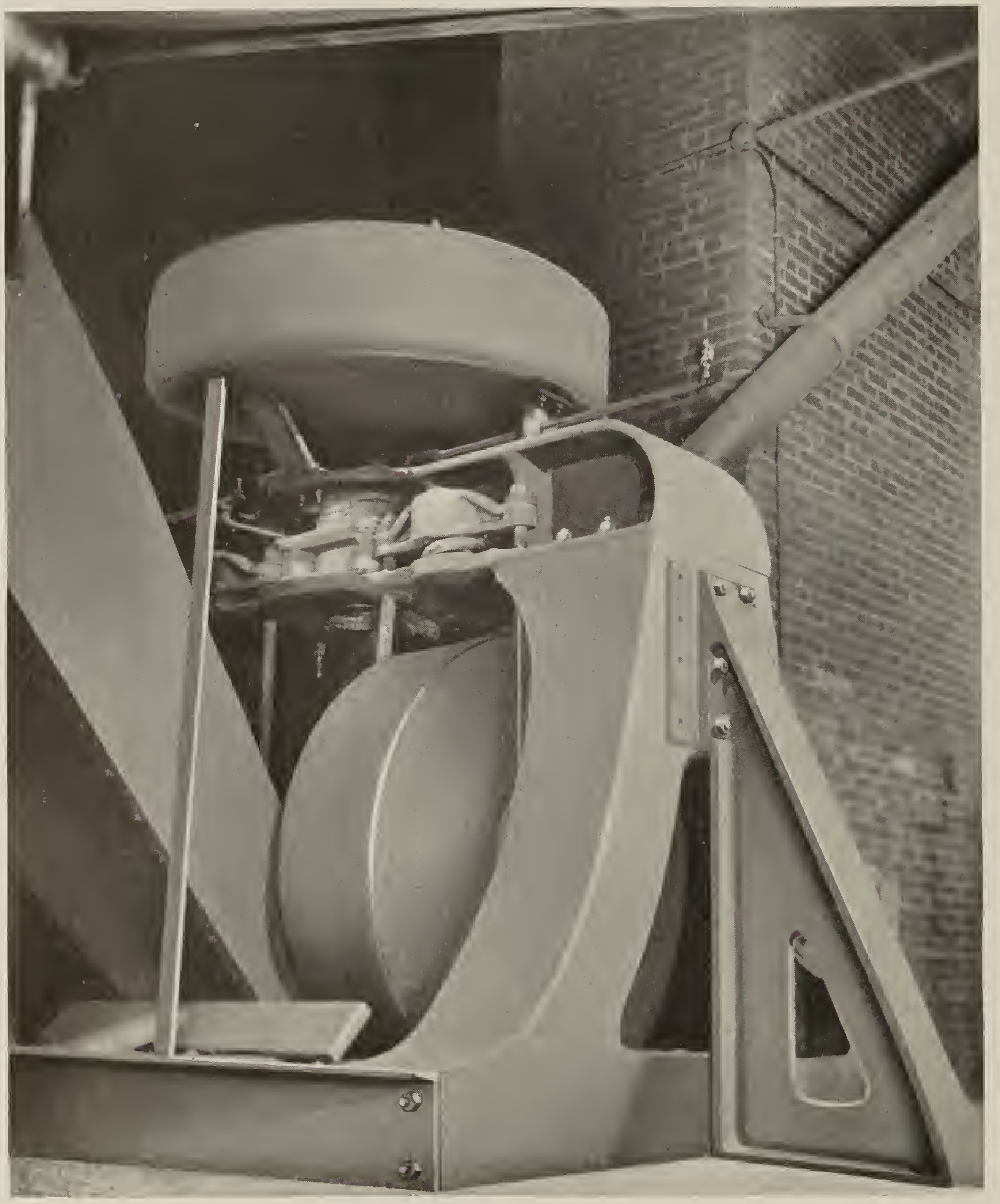
The weight of the No. 384 grinder completely arranged for belt drive is 68,500 pounds.

GENERAL DIMENSIONS

Capacity per hour	40 to 75 tons
Diameter of vertical shaft	8″
Diameter of forged collar	14″
Diameter of driving shaft	4″
Diameter of muller shaft	6″
Diameter of muller shaft bearing	5″
Diameter of shaft supporting muller yokes	5½″
Length of bearings on driving shafts	14″
Length of upper vertical bearing	18″
Length of lower vertical bearing	12″
Diameter of chilled discs in step bearing	16″
Diameter of bevel gear	59″
Diameter of bevel pinion	15″
Face of bevel gear	5″
Diametrical pitch	1¼″
Diameter of muller	60″
Face of muller tires	16″
Thickness of muller tires	5″
Weight of each muller	6 tons
Diameter of friction clutch pulley	48″
Face of friction clutch pulley	14″
Speed of pulley, R.P.M.	195
Power required	50 to 75 H.P.

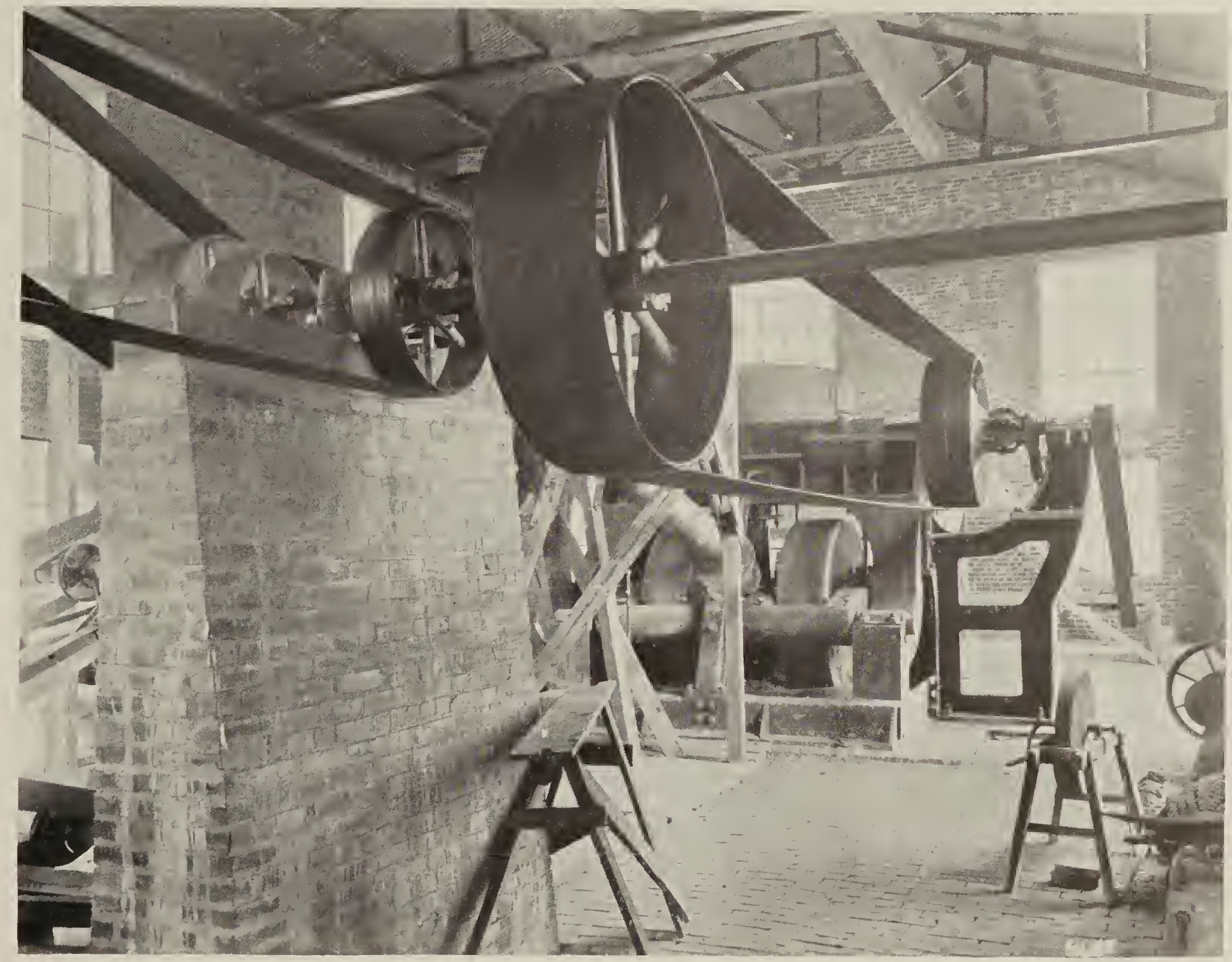
Clearance Dimensions

Length over all	16′ 9″
Width over all	9′ 5″
Distance to center of driving pulley from center of pan	5′ 8″
Height over all, including 15″ I-beams	14′ 8″
Distance from top of foundation to center of driving shaft	7′ 8″
Distance from bottom of 15″ I-beam to top of foundation	4′ 7″



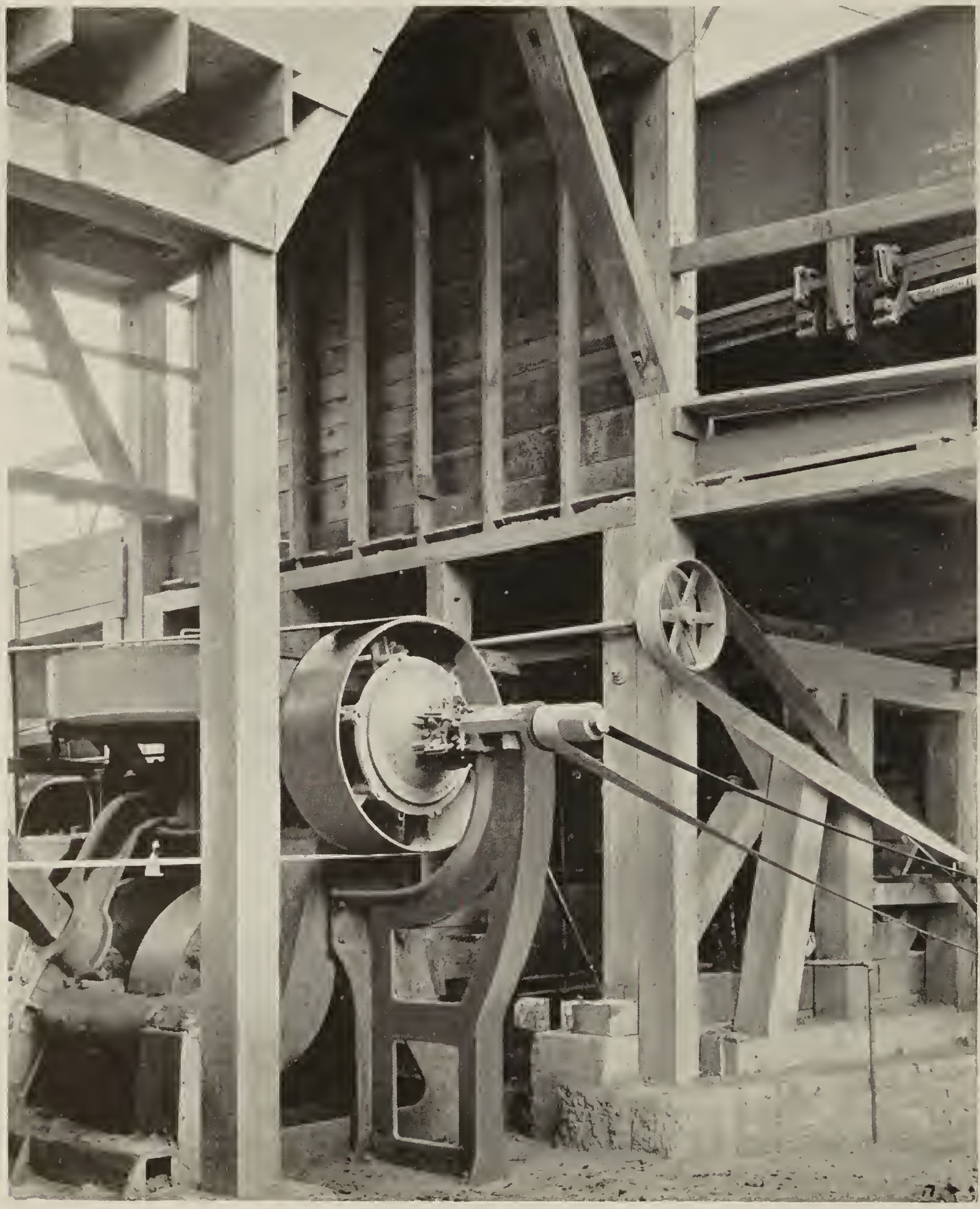
American No. 384 Grinder at Sugar Creek, Ohio

FINZER BROS. CLAY CO., Sugar Creek, Ohio, installed their No. 384 Grinder in 1926. They use a large bucket elevator encased in a brick housing to deliver material to the screens which are located on the upper floor above the Grinder. They grind and screen material for 100,000 brick per day at a very small cost per ton.



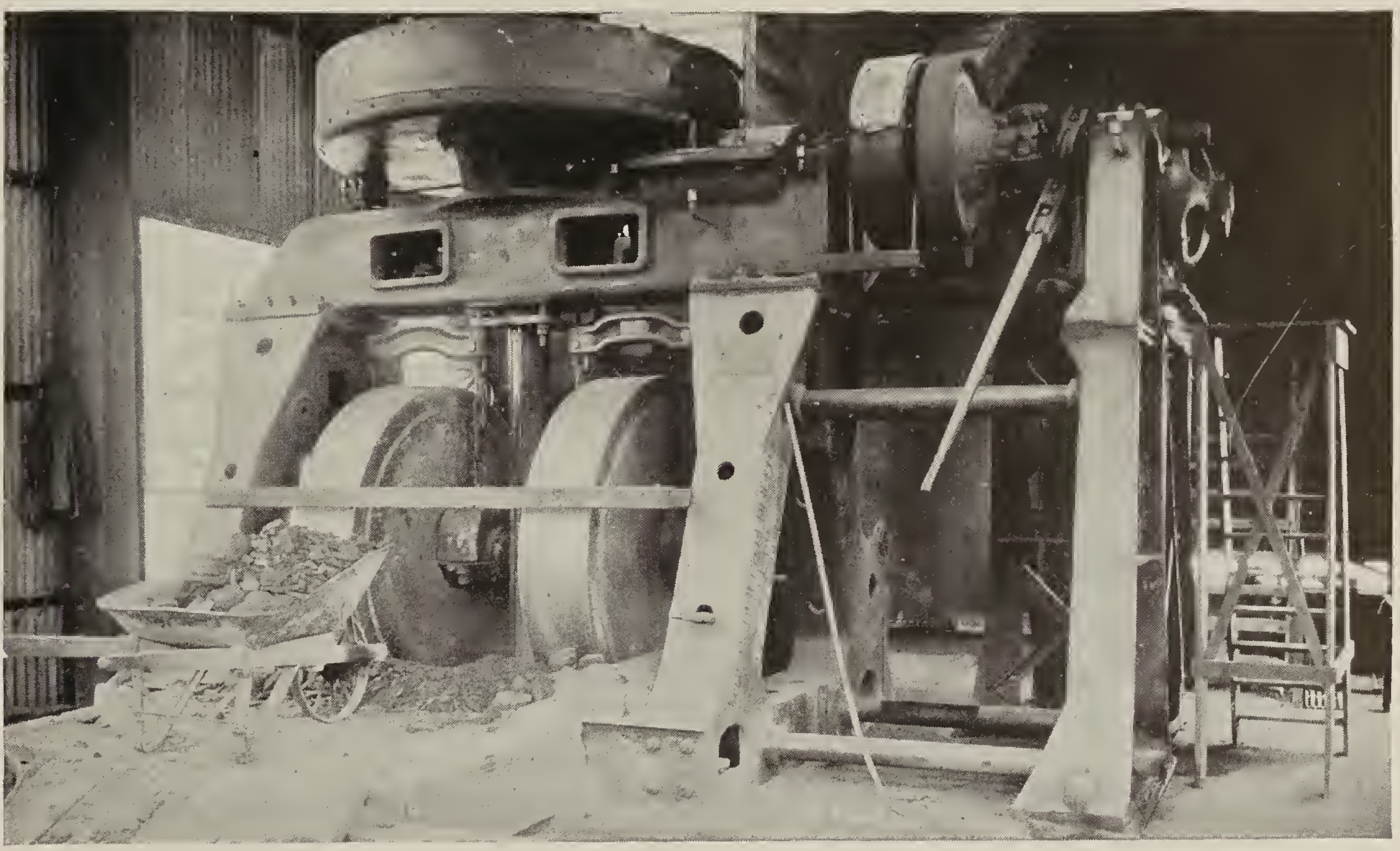
American No. 384 Grinder at Winchester, Va.

THE COLONIAL BRICK CO., Winchester, Va., installed their No. 384 Grinder in 1926. They are using 2 American No. 497 Piano Wire Screens set on the same floor level as the Grinder and use a conveyor system between the Grinder and Screens. This installation is giving splendid results.



American No. 384 Grinder at Salt Lake, Utah

THE SALT LAKE PRESSED BRICK CO., Salt Lake City, Utah, installed their No. 384 Grinder in 1922. They have been using it constantly and have ground material for millions of brick. On this plant the shale is delivered in bottom dump railroad cars on an elevated track. Shale is dumped into a bin under the track and is automatically fed to the Grinder with a reciprocating feeder. They grind eight or ten cars of shale per day.

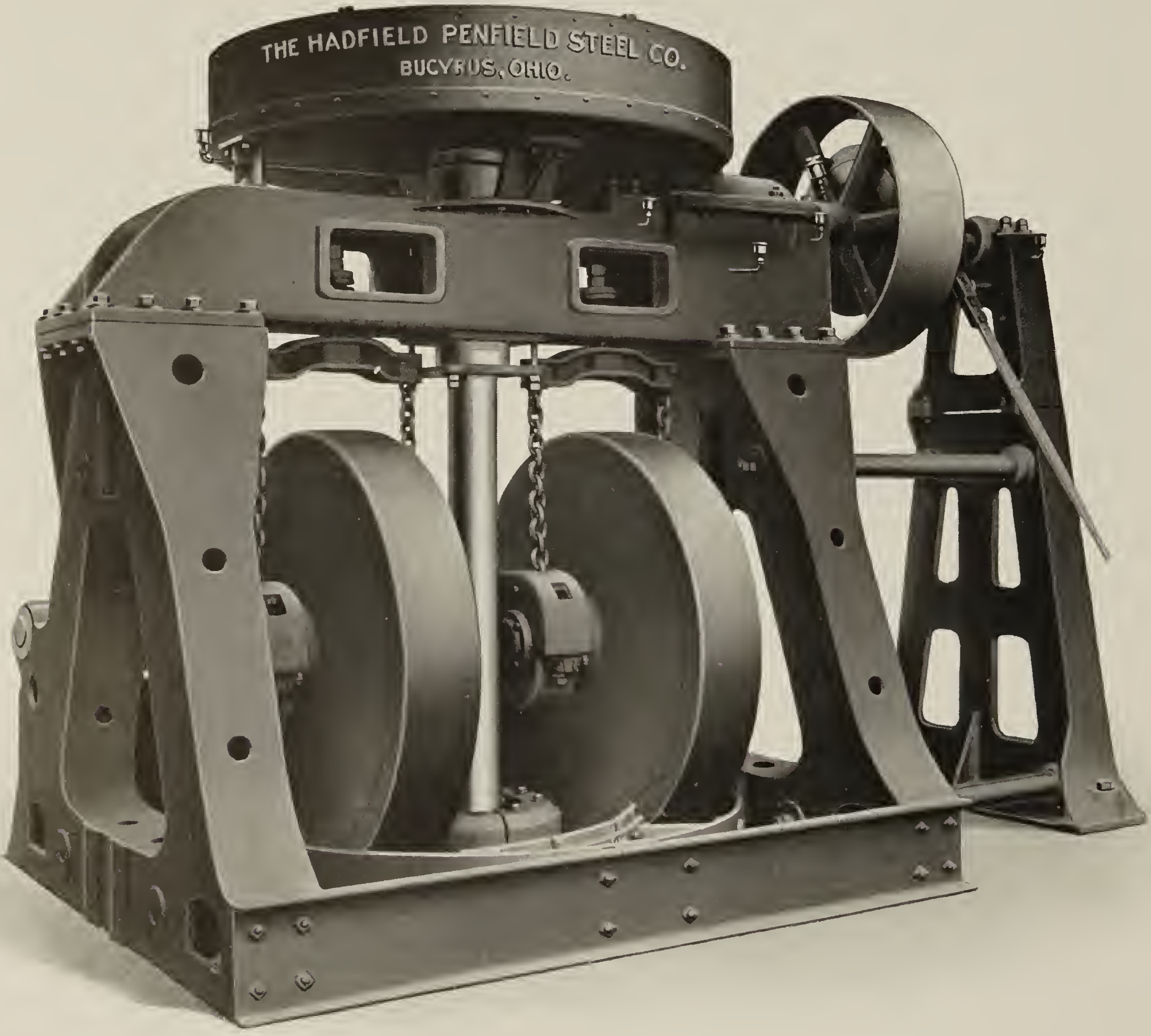


American No. 418 Grinder in the Plant of the Birmingham Clay Products Co., North Birmingham, Ala.

THIS Grinder was installed in 1926 and has been a great success. They are now grinding material for 75,000 brick per day.

This plant is also using the American No. 404 Combined Auger Machine.

American No. 418 Grinder



American No. 418 Grinder (Front View)
(Patented)

THE American No. 384 Grinder has shown a saving of over 60 per cent in the consumption of power and a like amount in wear and tear as compared to standard dry pans, as well as a saving in floor space and labor. For that reason we have brought out a smaller size, No. 418, as having the equivalent in capacity of two standard 9′ dry pans.

Like the No. 384, it is designed and built along modern lines with substantial framework and the most durable wearing parts with enclosed gears running in oil and reservoir oiling bearings with interchangeable bushings.

American No. 418 Grinder

GENERAL SPECIFICATIONS

This machine is designed for crushing and grinding hard clay, shale and similar material preparatory to the manufacture of brick and other clay products.

In appearance it resembles the dry pan, which is the machine that has been used extensively in the clay industry for many years. The operation of the machine, however, is different from a dry pan in the fact that there are no screen plates in the bottom of the machine.

The grinder is equipped with heavy mullers, and a heavy substantial grinding base similar in design and construction to the ordinary dry pan. The rim of the grinder, however, is stationary and is set so as to leave a space between the revolving base and the underside of the rim so that the material after passing under the mullers and being crushed, will discharge by centrifugal force off of the revolving base and through an opening under the stationary rim.

The rim is adjustable to regulate the opening for the escape of the crushed material and this regulates the degree of fineness to which the material is ground. The material, after being discharged from the grinder, passes by gravity to the elevator and is delivered to a screen in the usual manner, the tailings from the screen returning by gravity to the grinder. By reducing the diameter of the revolving base and eliminating the screen plates and long scrapers we greatly reduce the power required to operate and also reduce the cost of maintenance and at the same time greatly increase the capacity of the machine, as it is possible to operate the grinding members at a much higher speed.

The power required to operate one Standard 9′ dry pan is sufficient to operate one No. 418 grinder. The grinder would occupy a space practically equal to one 9′ pan and will grind as much material as can usually be ground by two Standard 9′ pans. Therefore, it will be readily seen that the single unit grinder is much more economical in power consumption, cost of maintenance and cost of installation.

We have had this particular type of grinder in use for more than ten years and the principle has been fully developed and proven to be thoroughly practical and economies have been thoroughly established.

The Standard American No. 418 grinder is built for belt drive but the machine may be arranged for motor drive when required.

Capacity

The capacity of the No. 418 grinder is, of course, governed by the nature and condition of the material being ground but it has been demonstrated that the capacity is equal to two Standard 9′ dry pans which would amount to from 15 to 30 tons of material per hour under ordinary conditions.

Frame

The frame consists of two heavy A-shaped end frames with a heavy cast iron top cross-frame and one channel and one cast iron cross-tie at the bottom.

Shafts

The vertical shaft is 7″ in diameter forged from a steel billet, the collar on the shaft supporting the grinding base is forged on the shaft and is 13″ in diameter. The driving shaft is forged steel 3½″ in diameter. Muller shafts are forged steel 5″ in diameter.

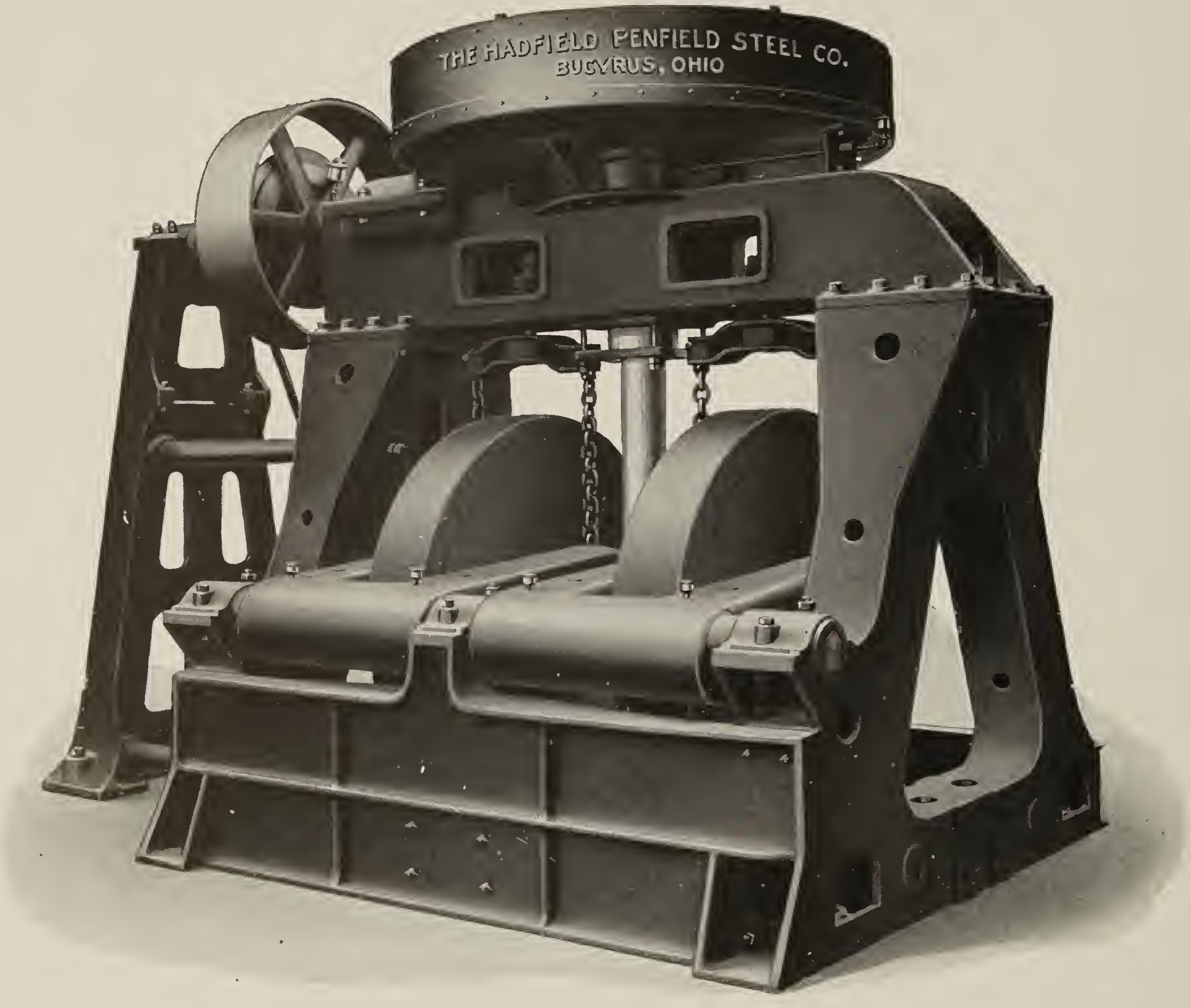
Bearings

Bearings are all bored and bushed on the interchangeable system for renewals. They all have individual oil reservoirs with ample provision for supplying lubrication to all bearing surfaces. The vertical bearing in the top cross-frame is packed to retain the oil. The driving shaft and muller shaft bearings are provided with bronze bushings.

Step Bearings

The step bearing is self-aligning and operates in a casing which will hold several gallons of oil. The bearing consists of three members.

American No. 418 Grinder



American No. 418 Grinder (Rear View)
(Patented)

The lower member is a chilled disc, convex so as to permit self-alignment. The upper surface of this member is ground true and provided with curved oil grooves to permit a free circulation of oil. This member is stationary. The upper member is a chilled disc, ground true and provided with spiral oil grooves. This member turns with the vertical shaft. Between these two discs is a phosphor bronze disc provided to take the wear.

This disc is free to revolve or to remain idle and the grooves in the chilled discs provide oil for lubricating the bronze disc.

The step casting consists of a heavy base, one side of which is removable to permit access to the working parts of the step. Joints are machined and a lead gasket prevents the escape of the oil. Above the bearing proper is a sleeve around the shaft which serves to maintain perfect alignment of the shaft. This sleeve is made on the ball and socket principle and is split so that it is readily removable. All interior parts of the step are readily accessible by drawing off the oil and removing the side cover plate.

I-Beams

The setting for the grinder provides for the step to be mounted on three 12″ I-beams and these beams are furnished with the grinder.

Gears

The large bevel gear is cast steel with cut teeth. The diameter is 65″, 5½″ face, 1½ diametral pitch. The driving pinion is made from a steel casting with cut teeth, 16¾″ diameter, 5½″ face. The gears are completely covered to exclude dust and run in a bath of oil.

Base

The base is a one-piece casting keyed to the vertical shaft and supported by a heavy collar forged on the shaft. This base carries the muller plates which are renewable.

Muller Plates

The muller plates are made of chilled cast iron and are machined on the bottom to insure a perfect bearing on the revolving base.

Mullers

The mullers are 60″ diameter, 12″ face. Muller tires are 4″ thick, cast in chills so that the grinding face has chilled surfaces. Each muller will weigh 4 tons. Mullers are keyed to the 5″ muller shaft and the shaft revolves in bearings that are provided with bronze bushings. Mullers are supported independently of each other by means of hinged yokes and are supported from above in such a manner as to make them adjustable to the clearance between the muller and the grinder base, thus greatly reducing the power required to start the machine when empty.

Muller Yokes

The yokes for the mullers are hinged on a shaft along one side of the grinder, leaving the opposite side clear for feeding the material into the machine. These yokes are heavy castings of ample strength to keep the mullers rigidly in place.

Driving Pulley

The machine is equipped with a Bucyrus type friction-clutch pulley 42″ in diameter, 12″ face and is usually operated at a speed of 195 R.P.M. which operates the grinding base at 50 R.P.M.

Weight

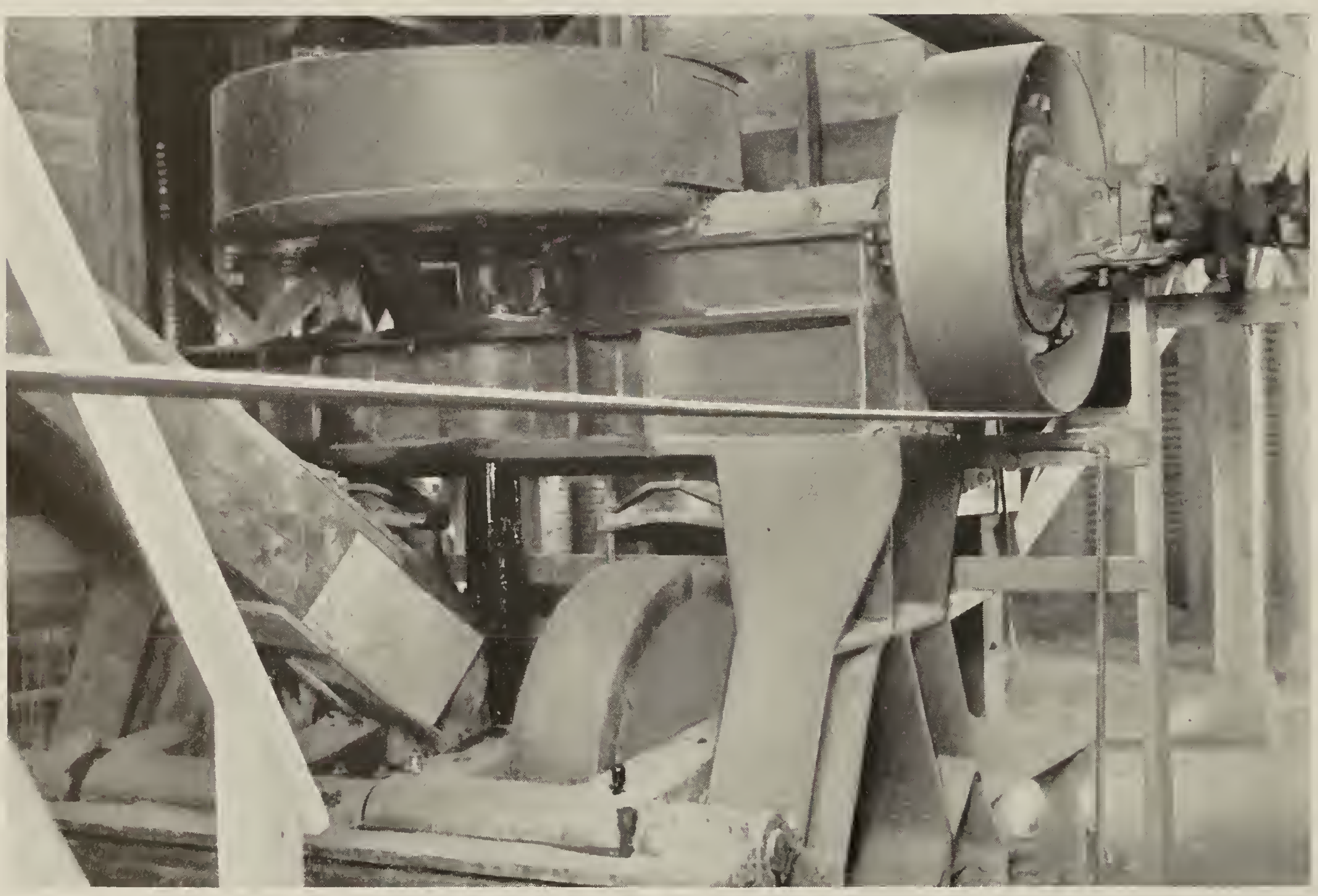
The weight of the No. 418 grinder arranged for belt drive is 48,800 pounds.

GENERAL DIMENSIONS

Capacity per hour	15 to 30 tons
Diameter of vertical shaft	7″
Diameter of forged collar	13″
Diameter of driving shaft	3½″
Diameter of muller shaft	5″
Diameter of muller shaft bearing	4″
Diameter of shaft supporting muller yokes	4½″
Length of bearing on driving shafts	10½″
Length of upper vertical bearing	17″
Length of lower vertical bearing	8¾″
Diameter of chilled discs in step bearing	14″
Diameter of bevel gear	65″
Diameter of bevel pinion	16¾″
Face of bevel gear	5½″
Diametral pitch	1½″
Diameter of muller	60″
Face of muller tires	12″
Thickness of muller tires	4″
Weight of each muller	9,000 lbs.
Diameter of friction clutch pulley	42″
Face of friction clutch pulley	12″
Speed of pulley	195 R.P.M.
Power required	20 to 40 H.P.

Clearance Dimensions

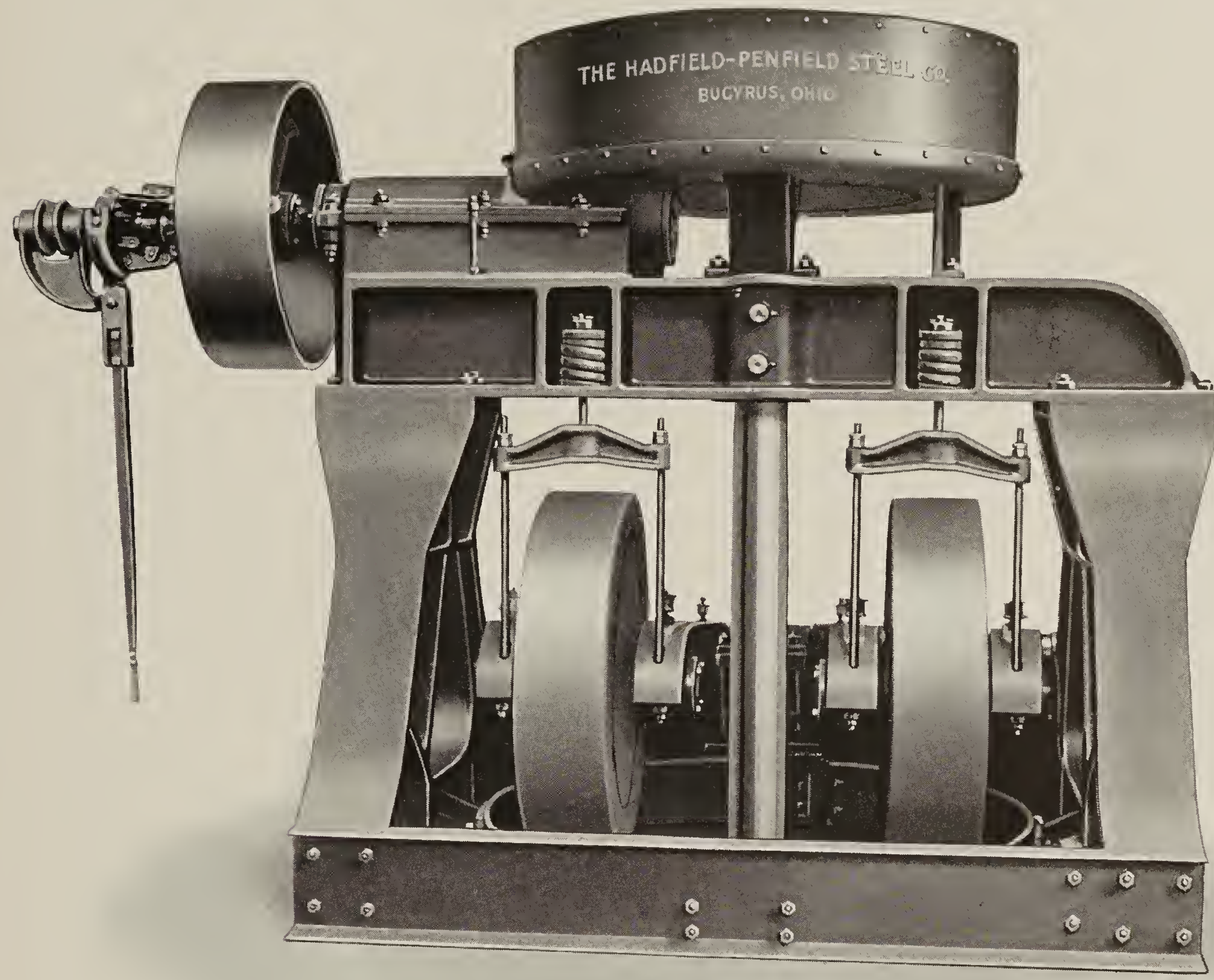
Length over all	14′	
Width over all	7′	9″
Distance to center of driving pulley from center of pan	5′	6½″
Height over all including 12″ I-beams	13′	8″
Distance from top of foundation to center of driving shaft	8′	0″
Distance from bottom of 12″ I-beam to top of foundation	3′	8½″



American No. 482 Grinder at Brownwood, Texas

THE TEXAS BRICK CO., Brownwood, Texas, installed their No. 482 Grinder in 1927. The equipment has given very good results. They have ground and screened as much as 250 tons of shale per day. They are also using the American No. 801 combined Auger Machine making brick and hollow building block.

American No. 482 Grinder



American No. 482 Grinder (Patented)

THE American Nos. 384 and 418 Grinders have shown a saving of over 60 per cent in the consumption of power and a like saving in wear and tear as compared to standard dry pans, as well as an equal saving in floor space and labor. For that reason we have brought out a smaller size, the No. 482, which has the equivalent in capacity somewhat in excess of one standard nine-foot dry pan. Like the Nos. 384 and 418, it is designed and built on modern lines, with substantial framework, and the most durable wearing parts. It has cut steel gears enclosed and running in oil. The driving shaft has Timken roller bearings and the step bearing has Timken roller bearings with our standard step bearing optional. Each bearing is amply oiled.

GENERAL SPECIFICATIONS

This machine is designed for crushing and grinding hard clay, shale and similar material preparatory to the manufacture of brick and other clay products.

In appearance it resembles the dry pan, which is the machine that has been used extensively in the clay industry for many years. The operation of the machine, however, is different from a dry pan in the fact that there are no screen plates in the bottom of the machine.

The grinder is equipped with heavy mullers and a heavy substantial grinding base similar in design and construction to the ordinary dry pan. The rim of the grinder, however, is stationary and is set so as to leave a space between the revolving base and the underside of the rim so that the material after passing under the mullers and being crushed, will discharge by centrifugal force off of the revolving base and through an opening under the stationary rim.

The rim is adjustable to regulate the opening for the escape of the crushed material and this regulates the degree of fineness to which the material is ground. The material, after being discharged from the grinder, passes by gravity to the elevator and is delivered to a screen in the usual manner, the tailings from the screen returning by gravity to the grinder. By reducing the diameter of the revolving base and eliminating the screen plates and long scrapers we greatly reduce the power required to operate and also reduce the cost of maintenance and at the same time, greatly increase the capacity of the machine as it is possible to operate the grinding members at a much higher speed.

It will grind as much or more than a standard nine-foot dry pan with less than half the power and the wear and tear is in direct proportion to the power consumption.

This particular type of grinder was built by us more than ten years ago and has been in successful continuous operation during all that time. The patented features were added later and greatly improved its performance.

The standard No. 482 Grinder is belt driven but provision for motor drive will be arranged when desired.

Capacity

The capacity of the No. 482 Grinder is, of course, governed by the nature and condition of the material being ground but it has been demonstrated that the capacity is equal to one standard nine-foot dry pan, which would amount to from five to ten tons of material per hour under ordinary conditions. Damp material can be handled in this grinder, as no screen plates are used.

Frame

The frame consists of two heavy A-shaped end frames with a heavy cast iron top cross-frame and one channel and one cast iron cross-tie at the bottom.

Shafts

The vertical shaft is 6¼″ in diameter forged from a steel billet. The driving shaft is forged steel 3½″ in diameter. Muller shafts are forged steel 4½″ in diameter.

Bearings

The driving shaft bearings are Timken roller bearings. The step bearing is Timken roller mounted in a self-aligning housing; our standard step bearing is interchangeable with the Timken roller bearing and will be substituted if desired.

The vertical bearing in crosshead is bored and bushed and lubricated with Uniflow lubricators. The muller yoke bearings are bored and bushed and lubricated with Uniflow lubricators.

I-Beams

The setting for the grinder provides for the step to be mounted on three 10″ I-beams and these beams are furnished with the grinder.

Gears

The large bevel gear is cast steel with cut teeth. The diameter is 47½″, 4″ face, 2″ diametral pitch. The driving pinion is made from a steel casting with cut teeth, 12″ in diameter, 4″ face. The gears are completely covered to exclude dust and run in a bath of oil.

Base

The base is a one-piece casting keyed to the vertical shaft and supported by a heavy sleeve and the step bearing. This base carries the muller plates which are renewable.

Muller Plates

The muller plates are made of chilled cast iron and are machined on the bottom to insure a perfect bearing on the revolving base, the top of which is also machined.

Mullers

The mullers are 48″ diameter, 10″ face.

Muller tires are 4″ thick, cast in chills so that the grinding face has chilled surfaces. Each muller will weigh 5200 pounds. Mullers are keyed to the 4½″ muller shaft and the shaft revolves in bearings that are provided with bronze bushings. Mullers are supported independently of each other by means of hinged yokes and are supported from above in such a manner as to make them adjustable for the clearance between the muller and the grinding base, thus greatly reducing the power required to start the machine when empty.

Muller Yokes

The yokes for the mullers are hinged on a shaft along one side of the grinder, leaving the opposite side clear for feeding the material into the machine. These yokes are heavy castings of ample strength to keep the mullers rigidly in place.

Driving Pulley

The machine is equipped with a Bucyrus type friction-clutch pulley, 36″ in diameter, 10″ face, and is usually operated at a speed of 200 R.P.M. which operates the grinding base at 50 R.P.M.

Weight

The weight of the No. 482 Grinder arranged for belt drive is 33,750 pounds.

GENERAL DIMENSIONS

Capacity per hour	5 to 10 tons
Diameter of vertical shaft	6¼″
Diameter of driving shaft	3½″
Diameter of muller shaft	4½″ and 3½″
Diameter of muller shaft bearing	3½″
Diameter of shaft supporting muller yokes	3½″
Length of upper vertical bearing	16″
Diameter of bevel gear	47½″
Diameter of bevel pinion	12″
Face of bevel gear	4″
Diametral pitch	2″
Diameter of mullers	48″
Face of muller tires	10″
Thickness of muller tires	4″
Weight of each muller	5,200 lbs.
Diameter of friction clutch pulley	36″
Face of friction clutch pulley	10″
Speed of pulley, R.P.M.	200
Power required	15 to 25 H.P

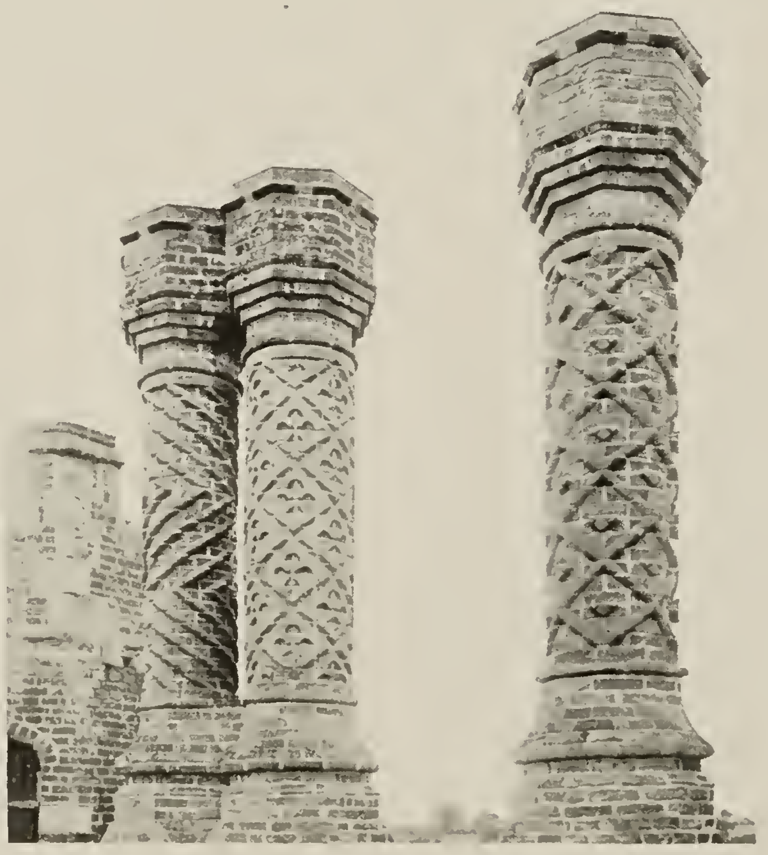
Clearance Dimensions

Length over all	12′ 1½″
Width over all	6′ 8″
Distance to center of driving pulley from center of pan	5′ 1″
Height over all including 10″ I-beams	11′ 10½″
Distance from top of foundation to center of driving shaft	6′ 8½″
Distance from bottom of 10″ I-beam to top of foundation	3′ 3¼″

Endorsement

The Use of American Grinders by the following companies is the soundest kind of endorsement:

Victor Cushwa & Son	Williamsport, Md.
Salt Lake Pressed Brick Company	Salt Lake City, Utah
Golden Fire Brick Co.	Golden, Colo.
Coors Porcelain Co.	Golden, Colo.
Auburn Shale Brick Co.	Auburn, Pa.
Morgan & Horton Clay Co.	Eifort, Ohio
Waterman Brick & Tile Co.	Waskom, Texas
Gladding McBean Company	Lincoln, California
Citadel Brick & Paving Block Co.	Quebec, Can.
Johnson City Shale Brick Co.	Johnson City, Tenn.
Darlington Fireproofing Co.	West Darlington, Pa.
Evens & Howard Fire Brick Co.	St. Louis, Mo.
Key James Brick Co.	Alton Park, Tenn.
California Pottery Co.	Niles, California
Colonial Brick Corporation	Winchester, Va.
Peebles Paving Brick Co.	Portsmouth, Ohio
Nazareth Brick Co.	Nazareth, Pa.
Columbia Fire Brick Co.	Strasburg, Ohio
Glen Gery Shale Brick Co.	Reading, Pa.
Covington Brick Company	Covington, Va.
Claycraft Mining & Brick Co.	Shawnee, Ohio
Vigo American Clay Company	Terre Haute, Ind.
Birmingham Clay Products Co.	Birmingham, Ala.
Glen Gery Shale Brick Co.	Shoemakersville, Pa.
Kingsport Brick Corporation	Kingsport, Tenn.
Borden Brick & Tile Co.	Sanford, N. C.
Hazleton Brick Company	Hazleton, Pa.
Alliance Brick Co.	Darlington, Pa.
Clay Products Company	Brazil, Ind.
Texas Brick Co.	Brownwood, Texas
Dominion Sewer Pipe & Clay, Ltd.	Swansea, Ont., Canada
Finzer Brothers Clay Co.	Sugarcreek, Ohio
Thurber Brick Co.	Thurber, Texas
Alton Brick Co.	Alton, Ill.
Danville Brick Co.	Danville, Ill.
Watkins Brick Co.	Birmingham, Ala.



Excellent Examples of Ornamental Brick Masonry

WARCO
BUCYRUS
OHIO

Dry Pan and Wet Pan Department

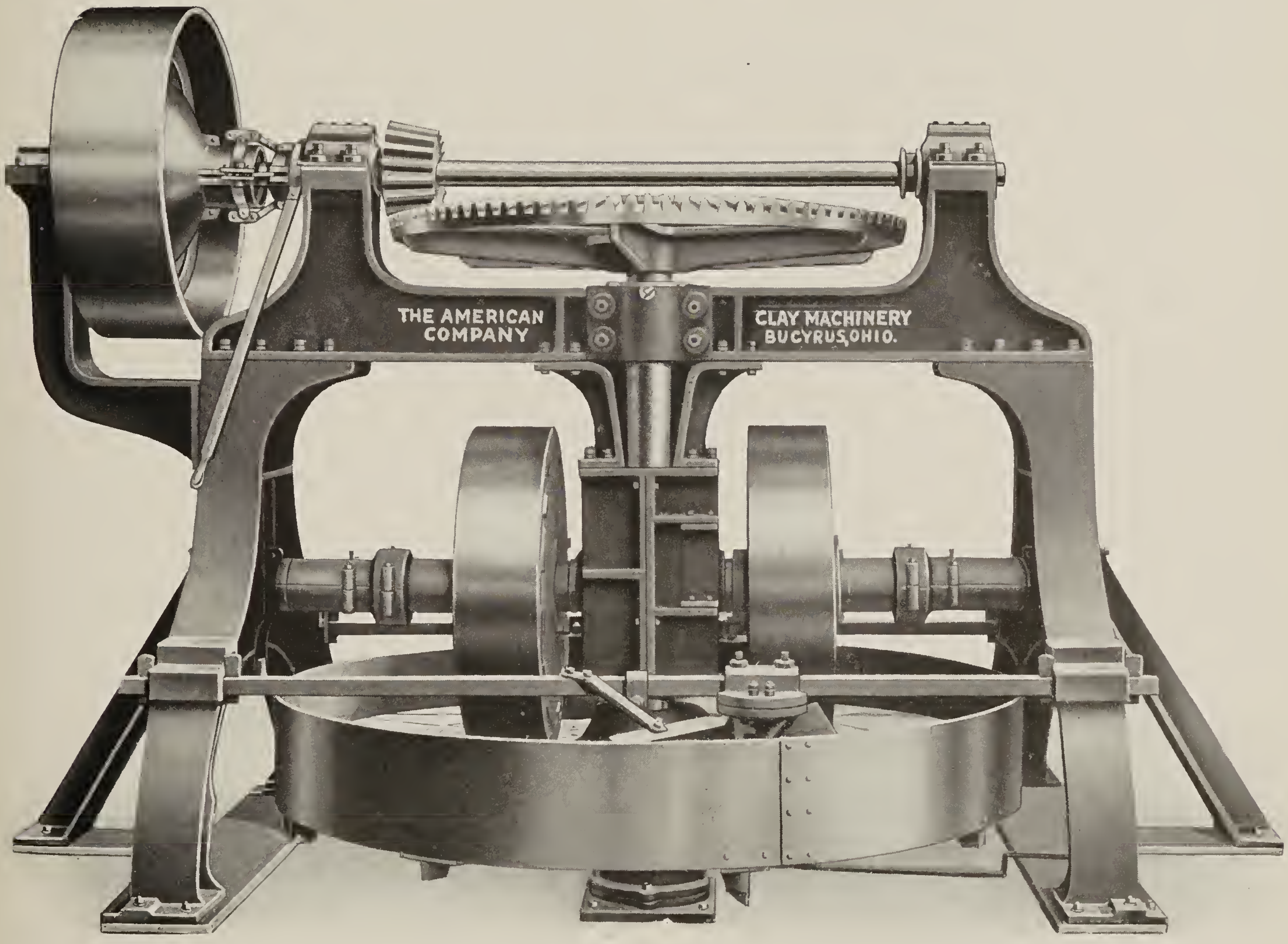
Standard American Dry Pans

TO the exacting buyer of Dry Pans our line appeals strongly, because of the superiority of design and excellence of material and workmanship, all of which are features that are of the greatest importance in the permanent satisfactory operation of grinding units. The capacity of a machine depends largely upon its design and construction, and the distinctive features embodied in our line have given them a greater capacity than others and have insured more working hours with fewer delays and repairs than can be had from other styles of machine. We have been generous in the design of each machine, our line being the heaviest on the market. This feature should be given special consideration.

The heavy side frames are substantially tied together at the top by the cross-beam, in the center by tie-bars and also on the floor line. The shafting is large and of steel. The gears are of special design and excellent quality. The bearings are long and well babbitted. The mullers are heavy, adjustable and removable. The screen plates are made of special iron. The step is of our approved type and the complete pan is one that can be depended upon under more than ordinary circumstances. All joints are carefully machined and fitted and bolts are made secure by lock nuts. The vertical shaft and muller shafts are secured by large removable bearings, which make it possible to remove any of these shafts or the mullers without disturbing the balance of the pan. The gearing is kept to its full efficiency by our device for taking up any possible wear, which insures a perfect mesh of the teeth at all times.

For preparing successfully many kinds of fire clay and shale used for making clay products, dry or wet pans are a necessity. For use in dry pans the clay should be practically dry, so that when ground, it will readily pass through the screen plates without clogging. The power is applied to the driving shaft of the pan which causes the main shaft and pan to revolve rapidly and, in turn, communicate motion to the crushing mullers. These mullers revolve on the muller shafts, holding them in position, but do not travel around the pan. As the material is thrown into the rapidly-revolving pan, centrifugal motion tends to throw it to the outside of the pan, where it encounters the scrapers or plows, which in turn throw it under the revolving mullers. In our dry pans this operation is repeated until the material is fine enough to sift through the screen plates in the bottom of the pan. Below the revolving pan should be arranged either a wooden platform or a second stationary pan to catch the material as it falls through the screen plates, arranged with an opening communicating with the boot of an upright bucket elevator. To the arms which hold the screen plates in position are bolted steel scrapers or wings, which catch the material as it drops through the screen plates onto the platform or stationary pan and convey it to the discharge opening, where it drops into the boot of the bucket elevator. The elevator catches the clay and conveys it to a screen, either stationary or revolving, which screens the clay and deposits it in a suitable bin ready for use. The tailings, or portions of material not fine enough to pass through the screen, are returned to the dry pan and reground.

American No. 339 Ten-Foot Dry Pan



American No. 339 Ten-Foot Dry Pan—Always Furnished With Sole Plate and Side Braces

Standard American Dry Pans

THE Dry Pan is a machine designed for crushing, grinding and screening hard clay, shale and similar material preparatory to the manufacture of brick and other clay products.

In the construction of the American pans only the best material is used and skilled labor employed. Each pan is erected complete and is carefully inspected before leaving the factory. The pan is dismantled for shipment and the parts are carefully marked, so that no trouble or delay is experienced in erecting the pan at the brick works, and no filing, chipping or drilling is necessary to make the parts fit properly in erecting it.

The American Standard Dry Pans are built in six sizes: The No. 339 Ten-Foot Pan; No. 57 Heavy Duty Nine-Foot Pan, designed for grinding the hardest class of material; the Standard Nine-Foot Pan, for ordinary clay or shale; Standard Eight-Foot, Seven-Foot and Five-Foot Pans for smaller capacities.

GENERAL SPECIFICATIONS

Capacity

The capacity of a dry pan is governed by the nature and condition of the material being ground and the degree of fineness required.

Pan Frame

The pan frame consists of two heavy "A"-shaped side frames with a heavy top cross frame securely bolted to broad bearing surfaces on the top of the side frames. At the front and back of the frame, just above the rim of the pan and passing through each side frame, are two square tie-bars. These bars are slotted where they pass through the side frames, and through these slots substantial tapered keys are driven. This construction securely locks the frame, both top and bottom. Both the side frames and the top cross-beam are heavy and made in proportion to stand the strain to which they are subjected. The joints are accurately and carefully made, and all bolts are fitted with lock nuts.

Shafts

The vertical shaft is hammered steel, forged in our own factory and turned to the proper diameter for bearing and wheel fit. The driving shaft and muller shafts are cold rolled steel.

Bearings

Bearings are long and well babbitted with the best grade of babbitt metal for the purpose. The 8′ and 9′ dry pans are fitted with a heavy cast iron bracket, bolted to the side frame of the pan to provide an outboard bearing for the driving shaft. The 7′ and 5′ dry pans are not furnished with the outboard bearing.

Step Bearings

The step bearing of the vertical shaft is one of the special features in the American Dry Pan. It consists of a steel toe piece and a hard phosphor bronze casting, oval in shape, so that the bearing is of the ball and socket type. These parts are placed in an oil chamber, with ample arrangement for keeping the step supplied with oil. The bronze casting is oval in shape, so that it is self-adjusting, insuring a perfect and even wearing surface, and preventing heating due to unequal wearing. This dry pan step bearing is the result of many years' experience, and gives universal satisfaction.

Gears

The gears are made of a special mixture of American gear metal. They are well proportioned and of ample strength for the service required.

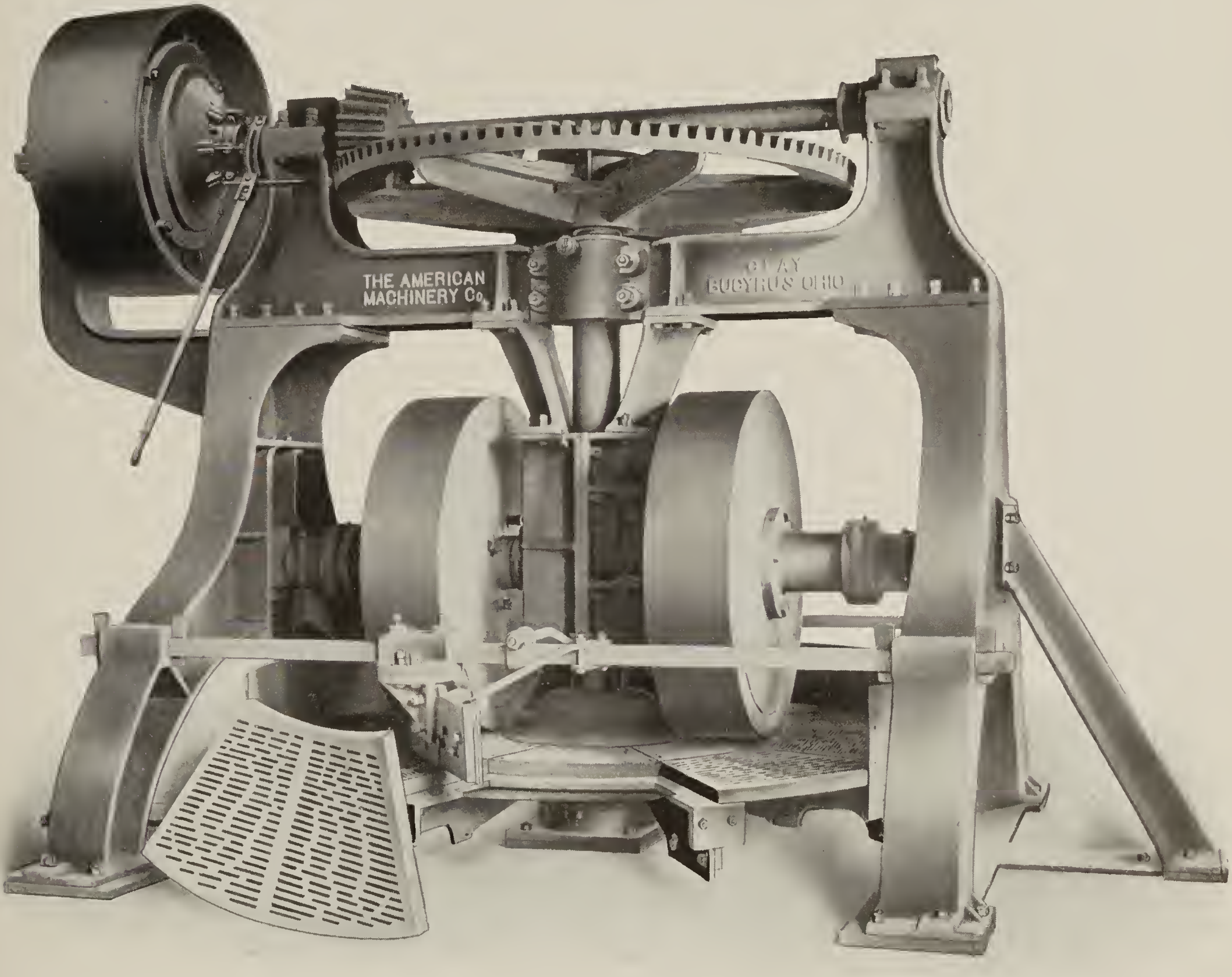
Base

The base, or hub, of the dry pan is a heavy one-piece casting keyed to the vertical shaft. The top of the casting is machined smooth, to receive the muller plates. The arms supporting the screen plates are securely bolted to the base and the pan rim is bolted to the end of the arms.

Muller Plates and Screen Plates

The muller plates and screen plates are made of a special mixture of iron, which we find gives long and satisfactory service. Either six or eight plates required for each pan, according to the diameter. The actual number of openings in the screen plates are as great as can be secured and retain the

American No. 57 Heavy Duty Nine-Foot Dry Pan



American No. 57 Nine-Foot Dry Pan for Heavy Duty—Always Furnished With Sole Plate and Side Braces proper strength in the casting. The standard size screen plate, always furnished unless otherwise specified, has openings ⅛″ wide.

Scrapers

The scraper holders are attached to the tie-bars, one on each side of the pan. The scrapers are hung on swivel joints, and may be hung at any angle desired. They can also be lowered when worn. The scrapers are provided with face plates made of our special mixture of iron. These face plates are made interchangeable and reversible, making it possible to use all four surfaces, and thus prolonging their usefulness. When the scraper plates are worn out they can be readily removed and new plates substituted at a small cost, without the necessity of buying a whole scraper.

Mullers

The mullers are supported on steel shafts, which are independent of each other. The ends of these shafts are provided with shoes which move in guides in the frame and in the shroud encircling the vertical shaft. The independent muller construction makes either muller removable without disturbing the other, and also makes it possible to set the mullers close to the vertical shaft, thus increasing the screening surface. The muller is a heavy casting, fitted with a hard, white iron tire, secured with white pine wedges. This tire is readily removed when worn. Each muller is fitted with a sleeve, forming the bearing on the shaft, and this bearing is supplied with oil from a reservoir inside of the muller. A chilled disc is fitted on the shaft to take the end thrust of the muller, and the space between the muller sleeve and the shoe on the muller shaft is fitted with split collars, which are readily removable at any time it may become necessary to make repairs. The ends of the muller shaft are supported by heavy steel springs, which may be set in such a position that the mullers are close to, but do not touch, the muller plates when the dry pan is empty. The space between the mullers and the muller plates can be adjusted to suit the material to be ground.

Driving Pulley

Each pan is fitted with a friction-clutch driving pulley, of the proper size in proportion to the work to be performed.

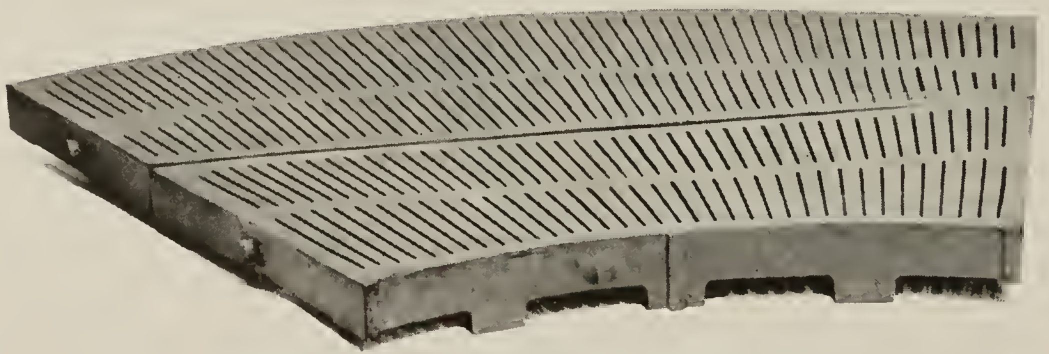
Speed

The speed of the driving pulley will vary under different conditions, according to the nature of the material being ground.

Power

Power required to operate the dry pan will vary under different conditions, and is governed largely by the nature of the material being ground.

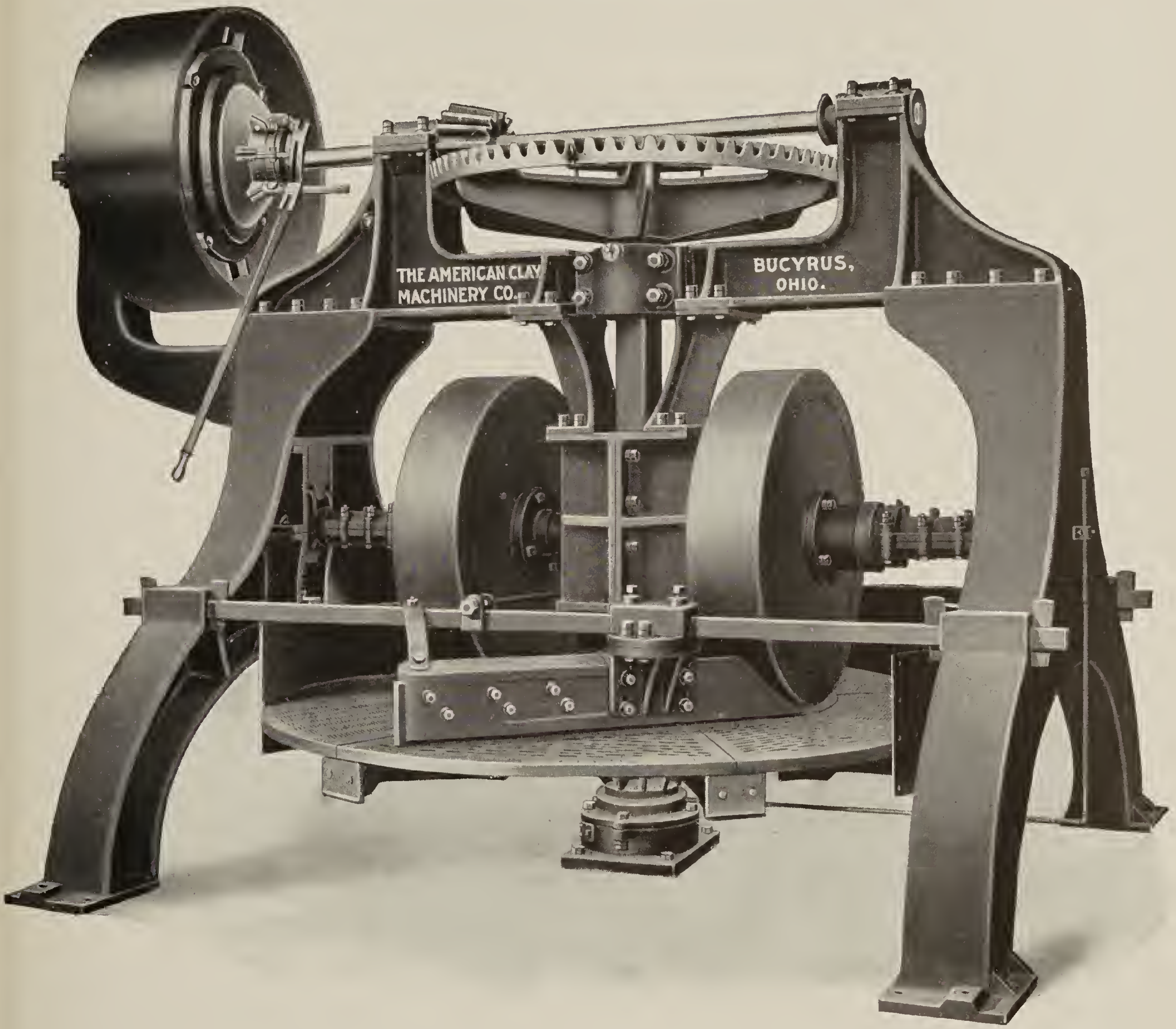
American Screen Plates for the American Nine-Foot Dry Pan



Symbol R-3711 Outside Section, ⅛-in. Slots
Symbol R-3712 Inside Section, ⅛-in. Slots.

THESE screen plates are made from a special mixture of material, stronger and more durable than plain cast iron. Owing to the increased tensile strength of the material, the slot area is increased almost forty percent. This gives greater screening capacity and the screens are practically unbreakable and should give double the service of a plain cast iron plate.

American Nine-Foot Dry Pan



SPECIFICATIONS

	Standard No. 339 10-ft. Dry Pan	No. 57 Heavy Duty 9-ft. Dry Pan	Standard 9-ft. Dry Pan	Standard 8-ft. Dry Pan	Standard 7-ft. Dry Pan	Standard 5-ft. Dry Pan
Rated capacity per hour in tons	10 to 15	5 to 10	3 to 10	3 to 8	2 to 6	1 to 4
Diameter of vertical shaft	8″	8″	6⅞″	6½″	6″	4⅝″
Diameter of driving shaft	4″	4″	3½″	3¼″	3″	3″
Diameter of muller shaft	5″	5″	3 15/16″	3½″	3″	3″
Length of bearings on driving shaft	10 and 12″	10 and 12″	10″	11″	10″	9″
Length of bearings on vertical shaft	13″	13″	10″	16″	10½″	10⅛″
Diameter of bevel gear	84½″	84½″	61¼″	56″	47¼″	44″
Diameter of bevel pinion	16¾″	16¾″	12⅜″	14″	11⅜″	8⅞″
Face of gear and pinion	8″	8″	8″	7½″	6½″	5½″
Pitch of gear and pinion	2¾″	2¾″	2¾″	2¾″	2¼″	2″
Ratio of gear and pinion	5 to 1	5 to 1	5 to 1	4 to 1	4.1 to 1	5 to 1
Diameter of mullers	54″	54″	48″	44″	40″	36″
Face of mullers	13″	13″	10″	10″	8½″	7″
Thickness of white iron muller tires	3⅝″	3⅝″	3¾″	4″	3 15/16″	2½″
Weight of each muller and accessories	8,277 lbs.	8,277 lbs.	5,200 lbs.	4,100 lbs.	3,775 lbs.	1,750 lbs.
Length of muller sleeve	28⅜″	28⅜″	18⅛″	18⅛″	11¾″	11″
Distance center to center of mullers	46½″	46½″	46″	36⅛″	32¾″	24⅜″
Thickness of muller plates	2½″	2½″	2″	1¾″	1¾″	1½″
Width of muller plates	16″	16″	13″	11½″	10¾″	8⅜″
Number of muller plates required	8	8	8	6	6	6
Width of screen plates	28¾″	22¾″	25″	23½″	19¾″	13¾″
Number of screen plates required	8	8	8	6	6	6
Number of arms required to support screen plates	8	8	8	6	6	6
Thickness of steel pan rim	⅜″	⅜″	3/16″	3/16″	3/16″	3/16″
Number of sections in rim	3	3	3	3	2	2
Depth of pan	11″	11″	11½″	12″	9¼″	9″
Diameter of friction-clutch driving pulley	60″	48″	48″	42″	36″	36″
Face of friction-clutch driving pulley	12″	14″	12″	12″	10″	8″
Speed of driving pulley R.P.M.	125 to 150	125 to 150	125 to 150	100 to 120	100 to 120	100 to 125
Power required H.P.	50 to 60	30 to 50	20 to 40	20 to 30	15 to 20	10 to 15
Average weight	50,500 lbs.	46,650 lbs.	31,250 lbs.	23,980 lbs.	15,940 lbs.	9,950 lbs.

DIMENSIONS

Length over all	17′ 2¼″	15′ 10¼″	14′ ½″	11′ 1″	10′ 4″	8′ 1½″
Width over all	10′	9′ 8″	9′ 6″	8′ 1″	7′ 2″	5′ 1″
Length from center of pan to center of driving pulley	7′ 1⅛″	6′ 3″	6′ 3″	4′ 7″	4′ 3″	3′ 6″
Length from center of pan to end of driving shaft on pulley side	8′ 7½″	8′ 3″	8′ 3½″	6′ 7½″	5′ 4½″	4′ 7″
Height over all	12′ 5″	11′ 3″	10′ 11″	9′ 9″	8′ 10½″	7′ 11½″
Height from floor to top of pan rim	2′ 2⅜″	2′ 2⅜″	2′ 11½″	2′ 10½″	2′ 8½″	1′ 11⅝″
Height from floor to center of driving shaft	9′ 3″	9′ 3″	8′ 11″	8′ 11″	7′ 4½″	6′ 5½″

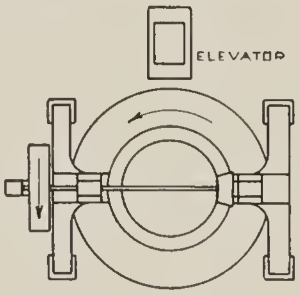


FIG. 9

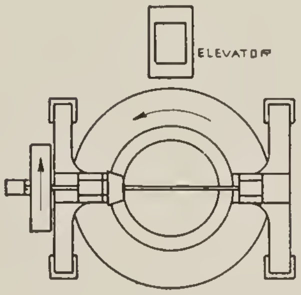


FIG. 10

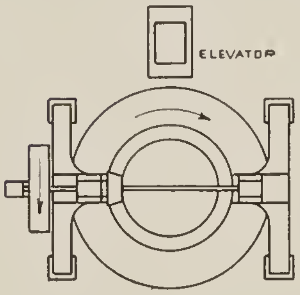


FIG. 11

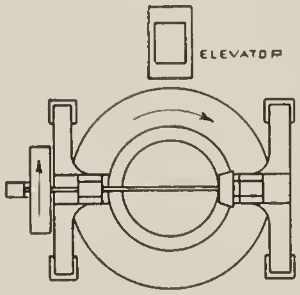


FIG. 12

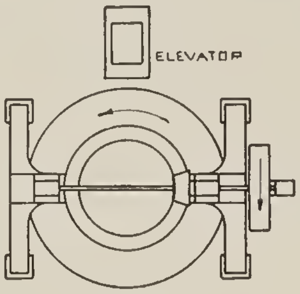


FIG. 13

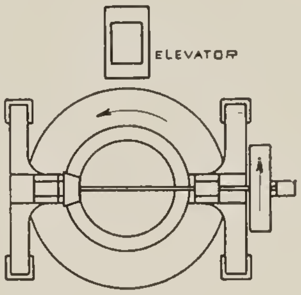


FIG. 14

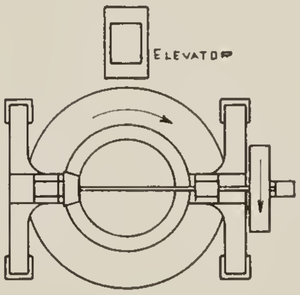


FIG. 15

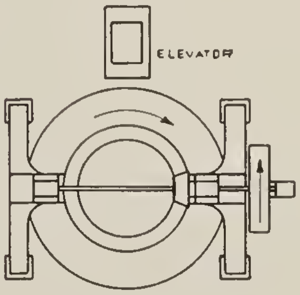
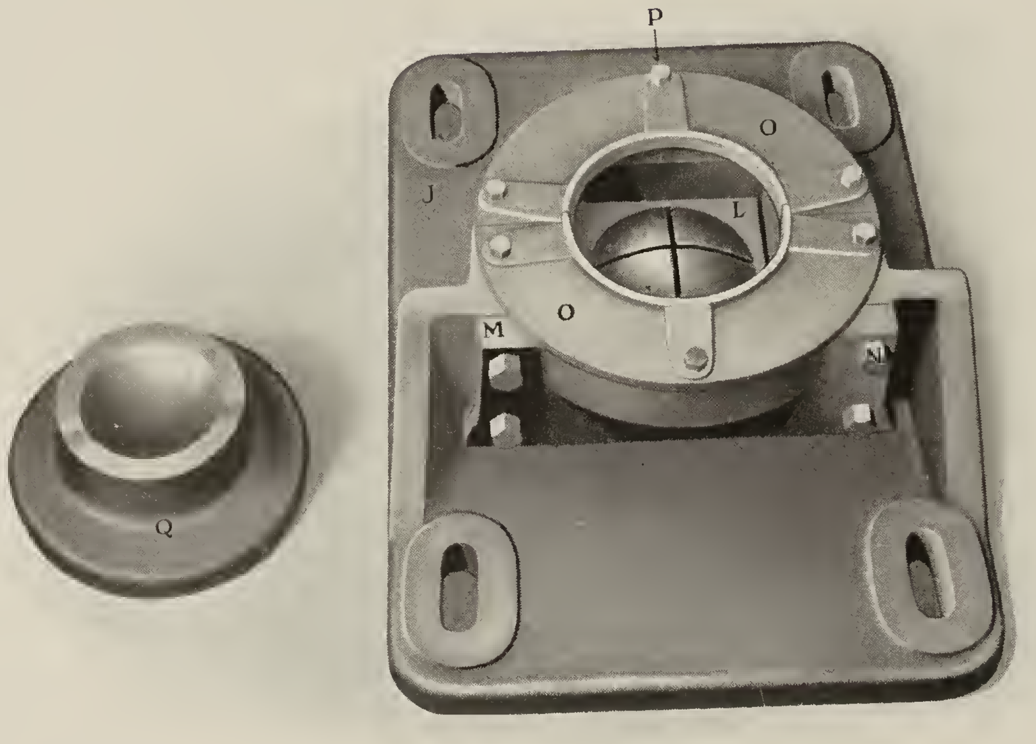


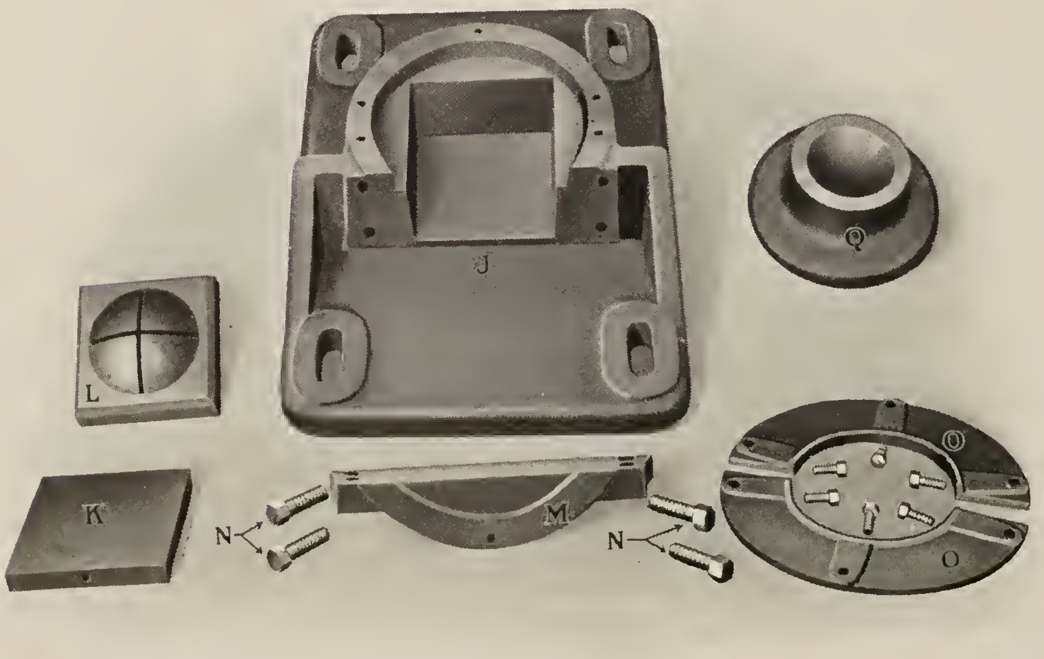
FIG. 16

ARRANGEMENT OF DRIVE
FOR
AMERICAN STANDARD DRY PANS

Unless otherwise specified all dry pans are built to drive according to Figure 10 shown in the above illustration



American Standard Step Bearing for Nine- Foot Pan



Standard American Wet Pans

WET Pans in design and general appearance resemble Dry Pans. Wet Pans, however, are built with a solid bottom and used as a batch mixer while the Dry Pan is built with screen plates in the bottom and is used as a continuous grinder.

The capacity of a pan depends largely upon its design and construction, and the distinctive features embodied in our line of pans have given them a great capacity and have insured continuous service with few delays and repairs.

The heavy side frames are substantially tied together at the top by the cross-beam, in the center by tie-bars and also on the floor line. The shafting is large and of steel. The gears are of special design and excellent quality. The bearings are long and well babbitted. The mullers are heavy, adjustable and removable. The muller plates are made of special iron. The step is of our approved type and the complete pan is one that can be depended upon under more than ordinary circumstances. All joints are carefully machined and fitted and bolts are made secure by lock nuts. The muller shafts are secured by removable guides which make it possible to remove these shafts or the mullers without disturbing the balance of the pan. The gearing is kept to its full efficiency by our device for taking up any possible wear, which insures a perfect mesh of the teeth at all times.

For preparing successfully many kinds of fire clay and shale used for making clay products, wet pans are a necessity. The wet pans are particularly adapted for handling material in moist condition.

The power is applied to the driving shaft of the pan which causes the main shaft and pan to revolve rapidly and, in turn, communicate motion to the crushing mullers. These mullers revolve on the muller shafts, holding them in position, but do not travel around the pan. As the material is thrown into the rapidly-revolving pan, centrifugal motion tends to throw it to the outside of the pan, where it encounters the scrapers or plows, which in turn throw it under the revolving mullers. In our wet pans this operation is repeated until the material is thoroughly mixed or tempered.

The entire contents of the Wet Pan may be readily discharged either by the Standard hand unloading shovel or with the mechanical unloader and delivered to a suitable bucket elevator or a belt conveyor.

GENERAL SPECIFICATIONS

Description

The wet pan is a machine designed for tempering clay, shale or similar material after same has been prepared in a dry pan or crusher preparatory to the manufacture of brick and other clay products.

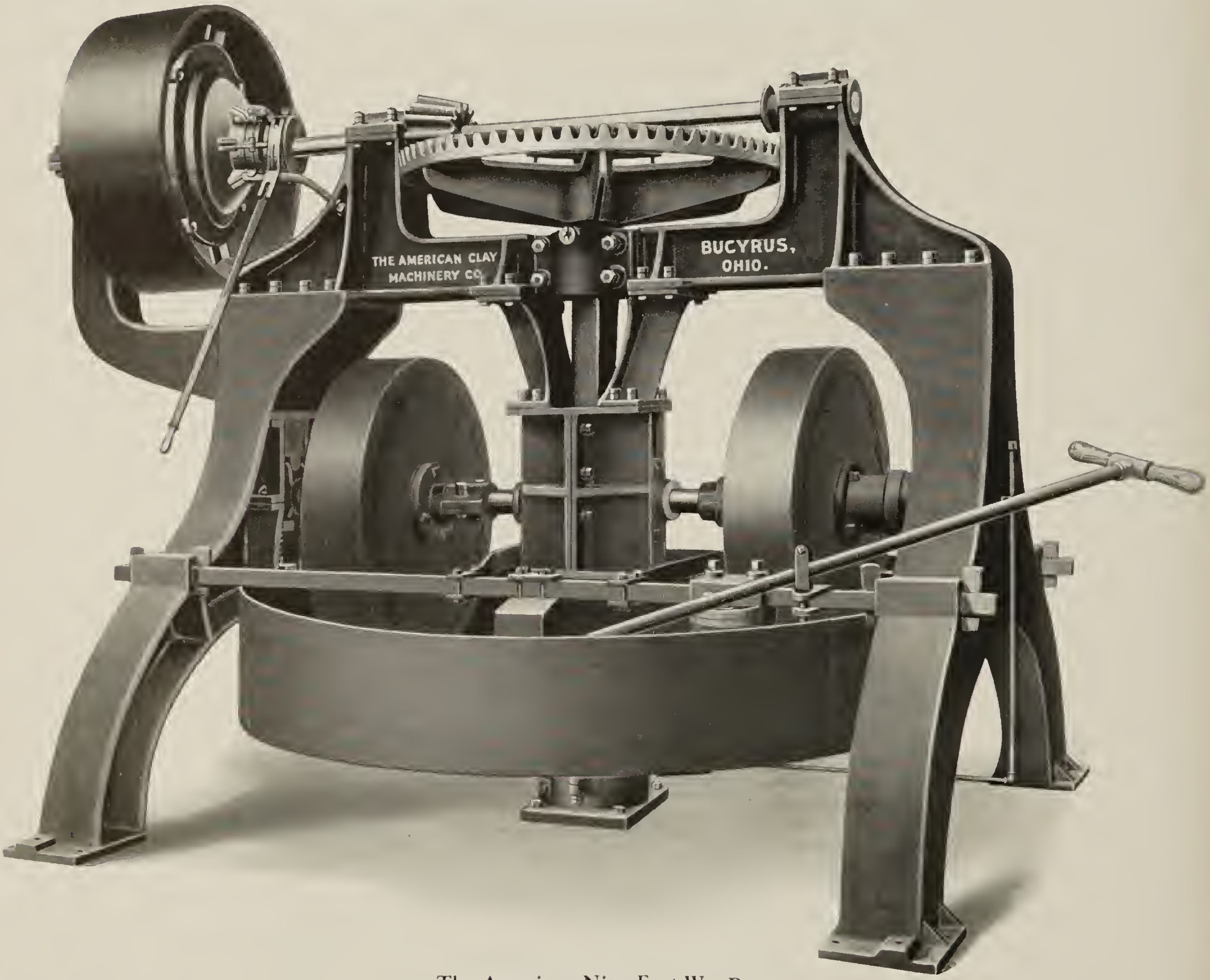
In the construction of the American pans only the best material is used and skilled labor employed. Each pan is erected complete and is carefully inspected before leaving the factory. The pan is dismantled for shipment and the parts are carefully marked, so that no trouble or delay is experienced in erecting the pan at the brick works, and no filing, chipping or drilling is necessary to make the parts fit properly in erecting it.

The American Standard Wet Pans are built in four sizes: 9′, 8′, 7′ and 5′ diameter.

Capacity

The capacity of a wet pan is governed by the nature and condition of the material being tempered.

American Standard Wet Pans



The American Nine-Foot Wet Pan

Pan Frame

The pan frame consists of two heavy "A"-shaped side frames, with a heavy top cross-frame securely bolted to broad bearing surfaces on the top of the side frames. At the front and back of the frame, just above the rim of the pan and passing through each side frame, are two square steel tie-bars. These bars are slotted where they pass through the side frames, and through these slots substantial tapered keys are driven. This construction securely locks the frame both top and bottom. Both the side frames and the top cross-beam are heavy and made in proportion to stand the strain to which they are subjected. The joints are accurately and carefully made, and all bolts are fitted with lock nuts.

Shafts

The vertical shaft is hammered steel, forged in our own factory, and turned to the proper diameter for bearing and wheel fit. The driving shaft and muller shafts are cold rolled steel.

Bearings

Bearings are long and well babbitted with the best grade of babbitt metal for the purpose. The 8′ and 9′ wet pans are fitted with a heavy cast iron bracket, bolted to the side frame of the pan to provide an outboard bearing for the driving shaft.

Step Bearings

The step bearing of the vertical shaft is one of the special features in the American Wet Pan. It consists of a steel toe piece and a hard phosphor bronze casting oval in shape so that the bearing is of the ball and socket type. These parts are placed in an oil chamber, with ample arrangement for keeping the step supplied with oil. The bronze casting is oval in shape so that it is self-adjusting, insuring a perfect and even wearing surface, and preventing heating due to unequal wearing. This wet pan step bearing is the result of many years' experience, and gives universal satisfaction.

Gearing

The gears are made of a special mixture of American gear metal. They are well proportioned and of ample strength for the service required.

Base

The base of the wet pan is a heavy circular casting keyed to the vertical shaft. The top of the casting is machined smooth, to receive the muller plates and wearing plates.

Muller Plates and Wearing Plates

The muller plates and wearing plates are made of a special mixture of iron, which we find gives long and satisfactory service.

Scrapers

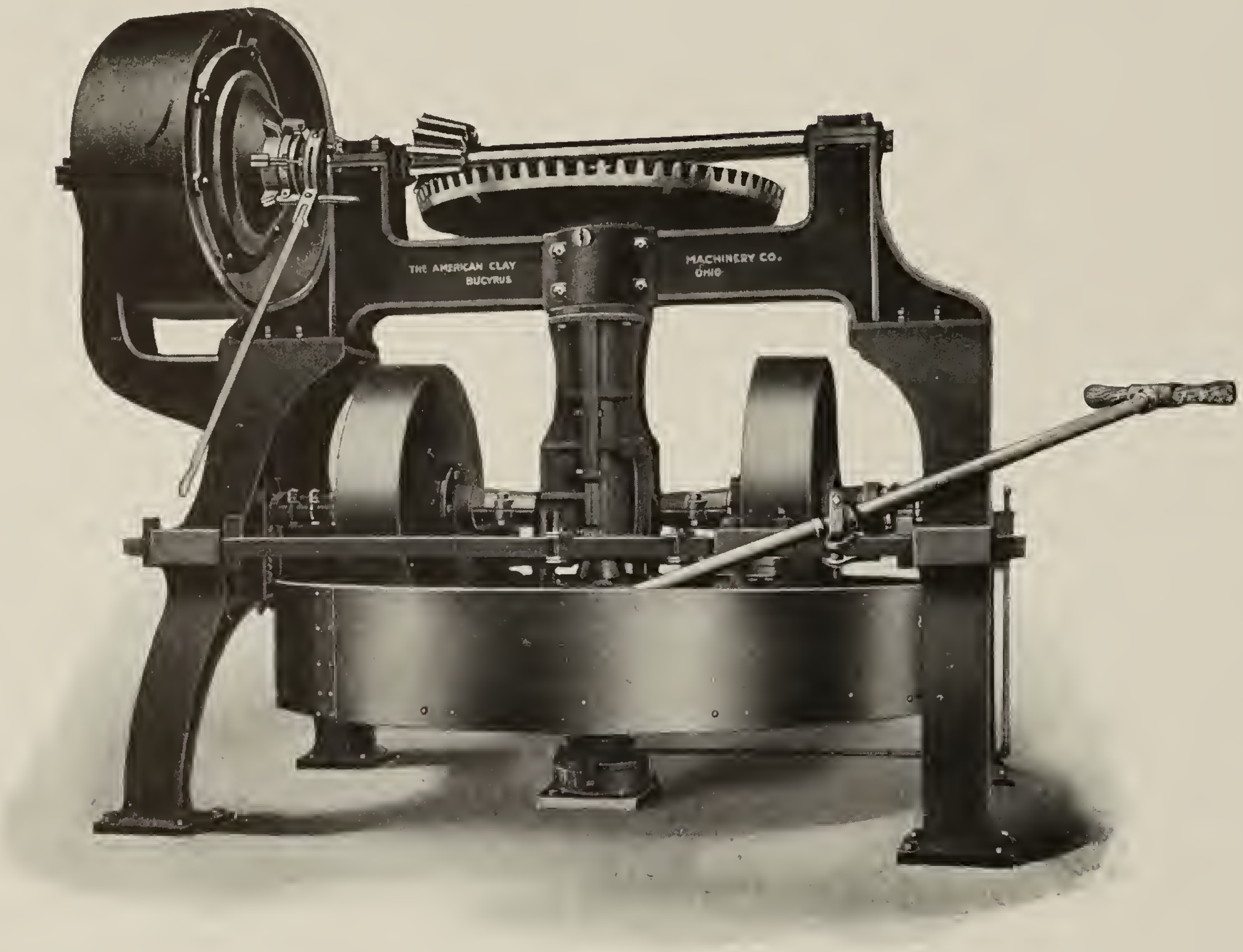
The scraper holders are attached to the tie-bars, one on each side of the pan. The scrapers are hung on swivel joints, and may be hung at any angle desired. They can also be lowered when worn. A pair of plows, or scrapers, is placed near the center of the pan. These plows turn the material and throw it to the outside edge of the pan where the outer scrapers again turn it and throw it under the mullers. This frequent turning insures more thorough mixing and tempering.

Unloading Shovel

For discharging the material from the pan a long handled shovel is furnished. The shovel is operated on a swivel supported on the tie-bar, and may be placed on either side of the pan to suit conditions. This shovel is made with a steel blade, which may be readily renewed when worn.

Mullers

The mullers are supported on steel shafts, which are independent of each other. The ends of these shafts are provided with shoes which move in guides in the frame and in the shroud encircling the vertical shaft. The independent muller construction makes either muller removable without disturbing the other. The muller is a heavy casting, fitted with a chilled iron tire, secured with white pine wedges. The tire is readily removed when worn. Each muller is fitted with a sleeve, forming the bearing on the shaft, and this bearing is supplied with oil from a reservoir inside of the muller. A chilled disc is



American Eight-Foot Wet Pan Equipped with Standard Hand Unloading Shovel. The Standard Hand Shovel for Unloading is Always Furnished with the Wet Pan Unless the Mechanical Unloader is Ordered

fitted on the shaft to take the end thrust of the muller, and the space between the muller sleeve and the shoe on the muller shaft is filled with split collars, which are readily removable at any time it may become necessary to make repairs. The ends of the muller shaft are supported by heavy steel springs, which may be set in such a position that the mullers are close to, but do not touch the muller plates when the pan is empty. The space between the mullers and the muller plates can be adjusted to suit the material to be tempered.

Driving Pulley

Each pan is fitted with a friction-clutch driving pulley of the proper size in proportion to the work to be performed.

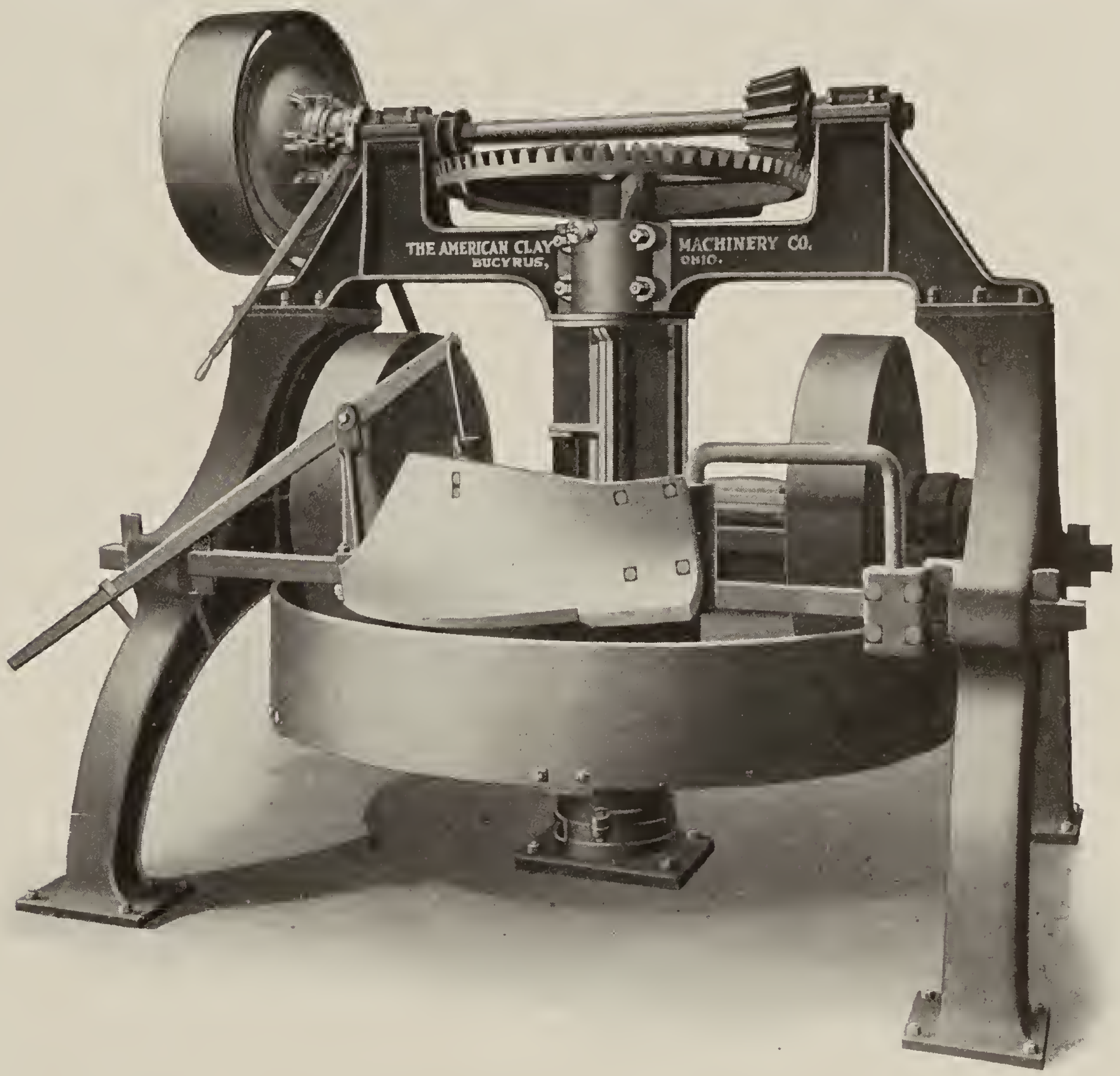
Speed

The speed of the driving pulley will vary under different conditions, according to the nature of the material being tempered.

Power

Power required to operate the wet pan will vary under different conditions, and is governed largely by the nature of the material being tempered.

Mechanical Unloaders for American Wet Pans



American Standard Wet Pan Equipped with Mechanical Unloader, Raised for Mixing

AMERICAN Wet Pans may be equipped with the American Mechanical Unloader, which enables the operator to unload the pan rapidly while in motion. The unloader is well and substantially built and is a thoroughly practical appliance. The illustrations show the position of the unloader when in the pan in position to unload, also the position when at rest out of the pan while the material is being thoroughly mixed or ground.

The mechanical unloader is not furnished with the pan unless especially ordered.

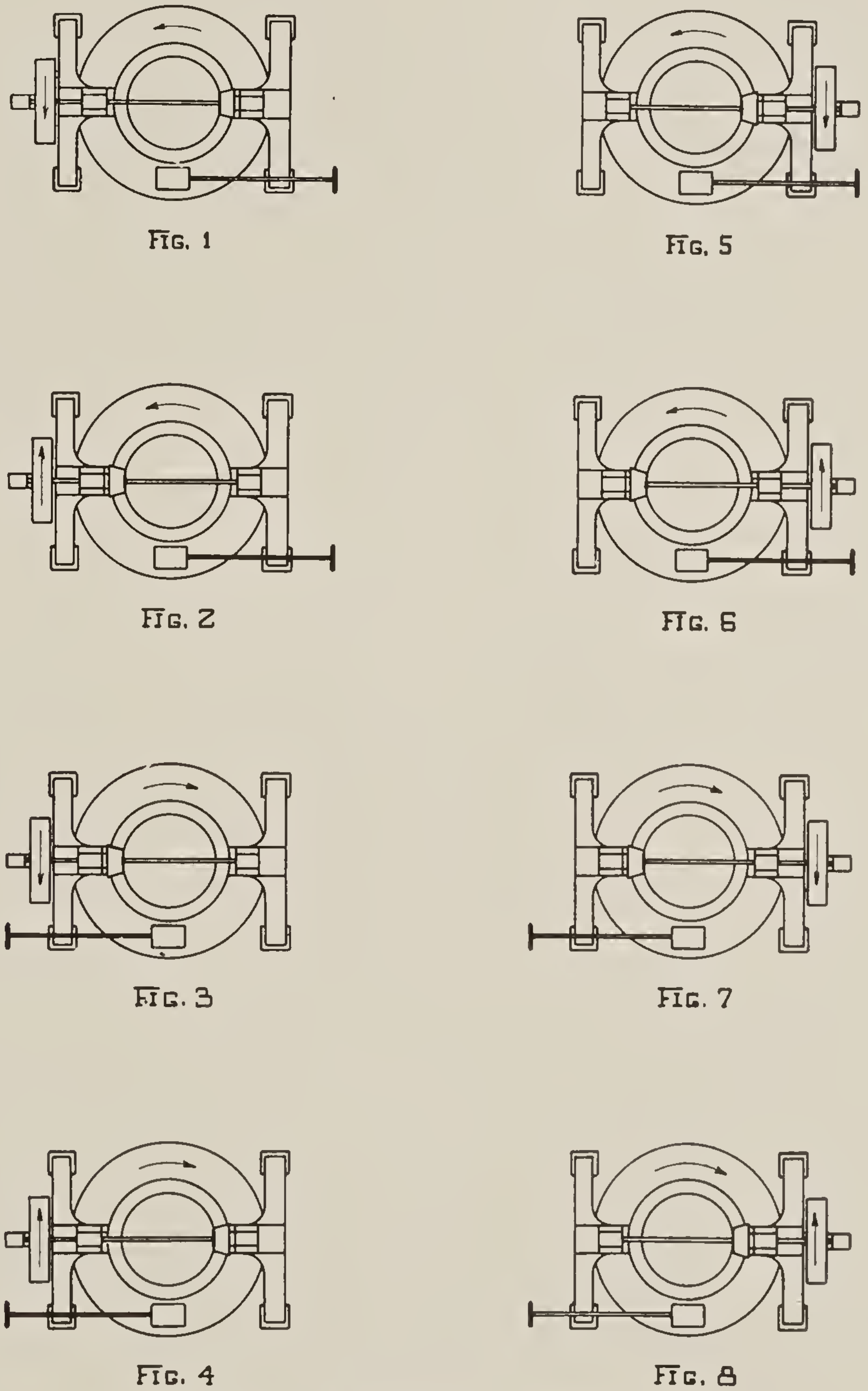
American Wet Pans

SPECIFICATIONS

	No. 57 Heavy Duty 9-ft. Wet Pan	Standard 9-ft. Wet Pan	Standard 8-ft. Wet Pan	Standard 7-ft. Wet Pan	Standard 5-ft. Wet Pan
Rated capacity per hour in tons	4 to 8	4 to 8	3 to 7	2 to 5	1 to 3
Diameter of vertical shaft	8″	6⅞″	6½″	6″	4⅝″
Diameter of driving shaft	4″	3½″	3¼″	3″	3″
Diameter of muller shaft	5″	3 15/16″	3½″	3″	3″
Length of bearings on driving shaft	10, 12″	10″	11″	10″	9″
Length of bearing on vertical shaft	13″	10″	16″	10½″	10⅛″
Diameter of bevel gear	84½″	61¼″	56″	47¼″	44″
Diameter of bevel pinion	16¾″	12⅜″	14″	11⅜″	8⅞″
Face of gear and pinion	8″	8″	7½″	6½″	5½″
Pitch of gear and pinion	2¾″	2¾″	2¾″	2¼″	2″
Ratio of gear and pinion	5 to 1	5 to 1	4 to 1	4.1 to 1	5 to 1
Diameter of mullers	54″	48″	44″	40″	36″
Face of mullers	13″	7″	7″	7″	5″
Thickness of chilled iron muller tires	3⅝″	3¾″	4″	3 15/16″	3″
Weight of each muller and accessories	7,677 lbs.	4,380 lbs.	3,300 lbs.	2,820 lbs.	1,625 lbs.
Length of muller sleeve	28⅜″	18⅛″	18½″	11¾″	11″
Distance center to center of mullers	72″	72″	62″	63″	41″
Thickness of muller plates	2½″	2″	1¾″	1⅛″	1½″
Width of muller plates	16″	13½″	14″	10¾″	9″
Number of muller plates required	8	8	6	6	6
Thickness of steel pan rim	⅜″	3/16″	3/16″	3/16″	3/16″
Number of sections in rim	3	3	3	2	2
Depth of pan	11″	12″	12″	9¼″	9″
Diameter of friction-clutch driving pulley	48″	48″	42″	36″	36″
Face of friction-clutch driving pulley	14″	12″	12″	10″	8″
Speed of driving pulley R.P.M.	150 to 175	150 to 175	120 to 140	120 to 140	100 to 125
Power required H.P.	30 to 50	30 to 50	20 to 40	15 to 30	10 to 20
Average weight	49,560 lbs.	33,920 lbs.	26,540 lbs.	19,240 lbs.	11,250 lbs.

DIMENSIONS

	No. 57 Heavy Duty 9-ft. Wet Pan	Standard 9-ft. Wet Pan	Standard 8-ft. Wet Pan	Standard 7-ft. Wet Pan	Standard 5-ft. Wet Pan
Length over all	15′ 10¼″	14′ ½″	11′ 1″	10′ 4″	8′ 1½″
Width over all	9′ 8″	9′ 6″	8′ 1″	7′ 2″	5′ 1″
Length from center of pan to center of driving pulley	6′ 9⅛″	6′ 3″	4′ 7″	4′ 3″	3′ 6″
Length from center of pan to end of driving shaft on pulley side	8′ 3½″	8′ 3½″	6′ 7½″	5′ 4½″	4′ 7″
Height over all	11′ 3″	10′ 11″	9′ 9″	8′ 10½″	7′ 11½″
Height from floor to top of pan rim	2′ 2⅜″	3′ 0″	2′ 10½″	2′ 8⅛″	1′ 11⅝″
Height from floor to center of driving shaft	9′ 3″	8′ 11″	8′ 11″	7′ 4½″	6′ 5½″



ARRANGEMENT OF DRIVE FOR AMERICAN STANDARD WET PANS

Unless Otherwise Specified All Pans are Built to Drive According to Figure 2 Shown in Above Illustration

American No. 335, Eight-Foot Heavy Duty Wet Pan

DESCRIPTION

Capacity

The capacity is governed by the size and nature of the material to be prepared, the degree of fineness and the amount of mixing and tempering required.

Side Frames

The side frames of this machine are heavy one-piece castings, tied together by the cross-beam and by two 2 x 5″ steel tie-bars. The bearing surface on each side frame where it fits onto the cross-beam is 30 x 33″ and ten 1″ bolts with lock nuts are used in each. The bearing surface on the foundation is 24″ x72″. Four 1½″ anchor bolts fasten each side frame to the foundation and also clamp the tie-bar to side frames.

Cross-Beam

The cross-beam is a heavy one-piece casting carrying the shaft bearings and forming a tie at the tops of the side frames, making a rigid and heavy construction to withstand all strains and absorb vibration.

Shafts

The vertical shaft is made of hammered steel, forged and turned to the proper diameter for bearing and wheel fits. The muller yoke and shafts are forged in one piece and accurately turned to size for bearings and fit. The driving shaft is made of cold rolled steel.

Bearings

The bearing shaft is provided with ring oiling bearings 14″ long. The outboard is a one-piece A-frame casting extending full length from driving shaft to foundation. The vertical shaft bearings are self-oiling, and 24″ long. All of these bearings are babbitted with the best grade of metal for the purpose. The self-aligning and self-oiling step bearing is 14″ diameter and consists of a phosphor bronze disc between two polished chilled iron plates immersed in oil.

The thrust bearings on muller shaft are 10¼″ diameter.

Gearing

The gearing is made of American gear metal and well proportioned for the service required.

Base

The base is a heavy one-piece casting designed with deep reinforcing ribs and having a bearing on the vertical shaft of 22″. The top of the base is machined smooth to receive the muller and wearing plates.

Muller and Wearing Plates

The muller plates are made of white cast iron and afford a hard, durable grinding surface. The wearing plates are made of hard cast iron.

Pan Unloader

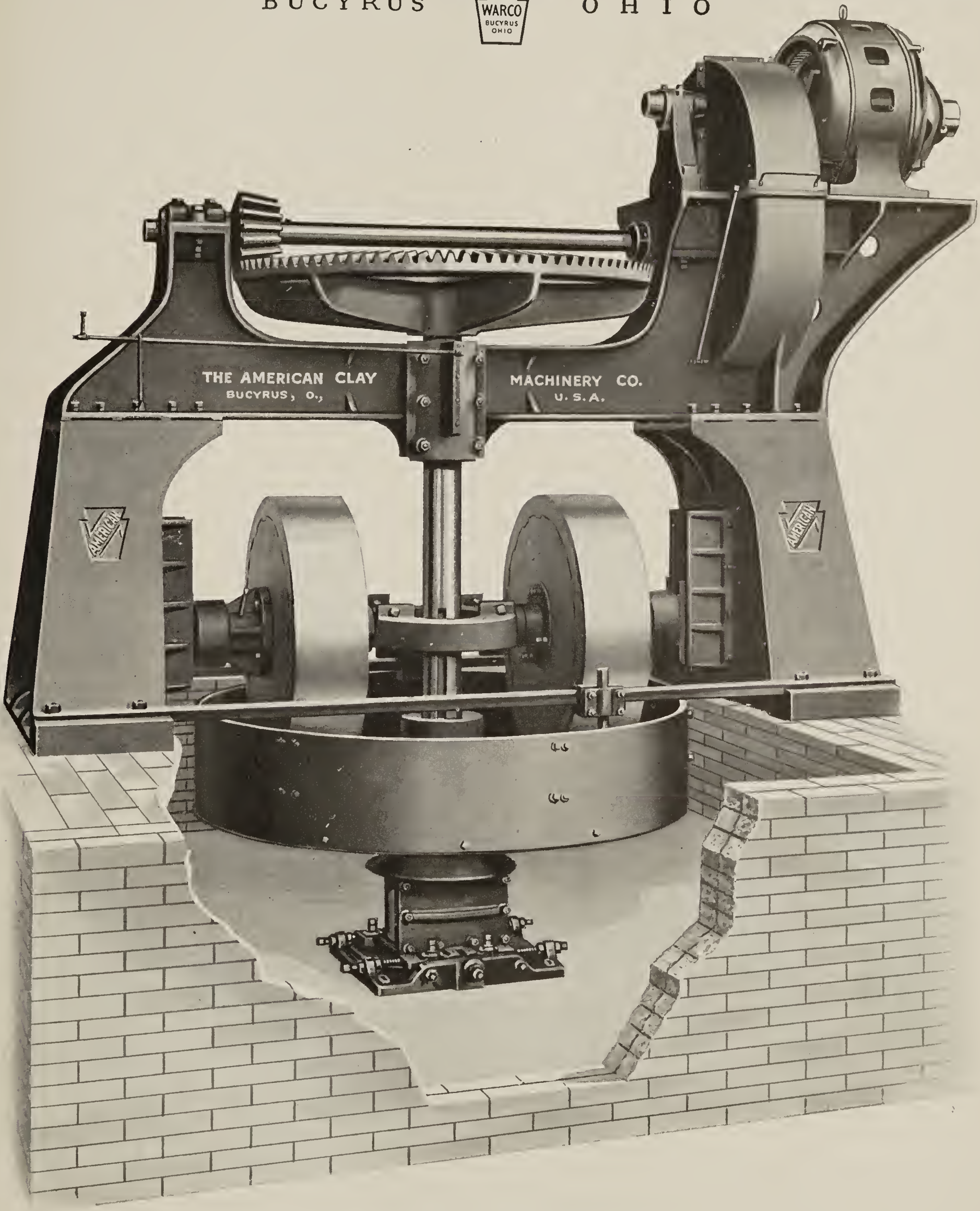
The unloader is our standard plow type, which is hinged and can be raised or lowered by means of a lever. When lowered for discharging the toe of plow rests on the pan bottom and the clay is forced upward and discharged over the edge of the rim. When not in use it can be raised and held out of the way.

Scrapers

The scrapers are so placed that the material is constantly turned and thrown under the mullers, insuring perfect grinding, mixing and tempering. These scrapers are all made of white cast iron and the two outer scrapers are provided with removable toe pieces of the same material. Swivel holders clamped to the tie bars allow the scrapers to be adjusted to suit conditions.

Mullers

The mullers are heavy, cast iron rolls fitted with hard, white cast iron tires secured with white pine wedges. This tire is readily removed when worn. Each muller is fitted with sleeve, forming the bearing on the muller shaft, and provided with a pair of chilled discs to take the end thrust.



American No. 335, Eight-Foot Heavy Duty Wet Pan

Rim

The outer rim is made up of three steel plates accurately fitted and bolted to the pan base. Riveted to the inside of the outer rim are three steel plates forming an inner wear-resisting surface of great durability. These inner plates are 1″ thick.

Driving Pulley

Each pan if belt driven is fitted with a cast iron driving pulley equipped with Bucyrus type friction-clutch of ample proportion to handle the load.

Power

Power to operate this wet pan will vary with the nature of the material to be ground and tempered.

Note

This pan is built either belt driven or motor driven. The belt-driven pan is standard and will be furnished unless otherwise specified.

When arranged for motor drive, using direct-connected motor, as here illustrated, we recommend the use of a 75 H.P. 3-bearing motor operating at 514 R.P.M. If alternating current is used we advise use of slip-ring type motor.

We use a wide face cut steel gear on drive-shaft with rawhide pinion on motor shaft for connecting motor to pan.

Each pan is erected complete in the factory and before dismantling for shipment each part is carefully fitted, marked and inspected so that no fitting is necessary to erect it in the field, thereby avoiding unnecessary delay and trouble.

SPECIFICATIONS

Rated capacity per hour, in tons	3 to 7
Diameter of vertical shaft	8″
Diameter of driving shaft	4″
Diameter of muller shaft	5″
Length of bearing on driving shaft	13½″
Length of bearing on vertical shaft	24″
Diameter chilled disc in step bearing	14″
Diameter of chilled disc in thrust bearing on muller shaft	10¼″
Diameter of bevel gear	85″
Diameter of pinion	14″
Face of gear and pinion	8″
Pitch of gear and pinion	2¾″
Ratio of gear and pinion	6 to 1
Diameter of mullers	54″
Face of mullers	14½″
Thickness of white iron muller tires	4″
Weight of mullers and shaft complete	20,050 lbs.
Length of muller sleeve	28″
Distance center to center of mullers	56½″
Width of muller plates	19″
Thickness of muller plates	3″
Number of muller plates required	8
Thickness of pan rim	½″
Thickness of pan rim lining	1″
Number of sections in pan rim	3
Number of sections in pan rim lining	3
Depth of pan	12″
Diameter of friction-clutch driving pulley	60″
Face of friction-clutch driving pulley	12″
Speed of driving pulley, R.P.M.	170
Power required, H.P.	50 to 75
Average weight	60,150 lbs.

DIMENSIONS

Length over all	18′	10″
Width over all	8′	3″
Length from center of pan to center of driving pulley	7′	7″
Length from center of pan to end of driving shaft, pulley side	9′	9¾″
Height over all	15′	1″
Height from floor to top of pan rim		2½″
Height from floor to center of driving shaft	7′	11″
Height from bottom of step to floor line	4′	1½″
Height from bottom of step to top of rim	4′	4″

WARCO
BUCYRUS
OHIO

Elevator, Conveyor and Screen Department

American Bucket Elevators

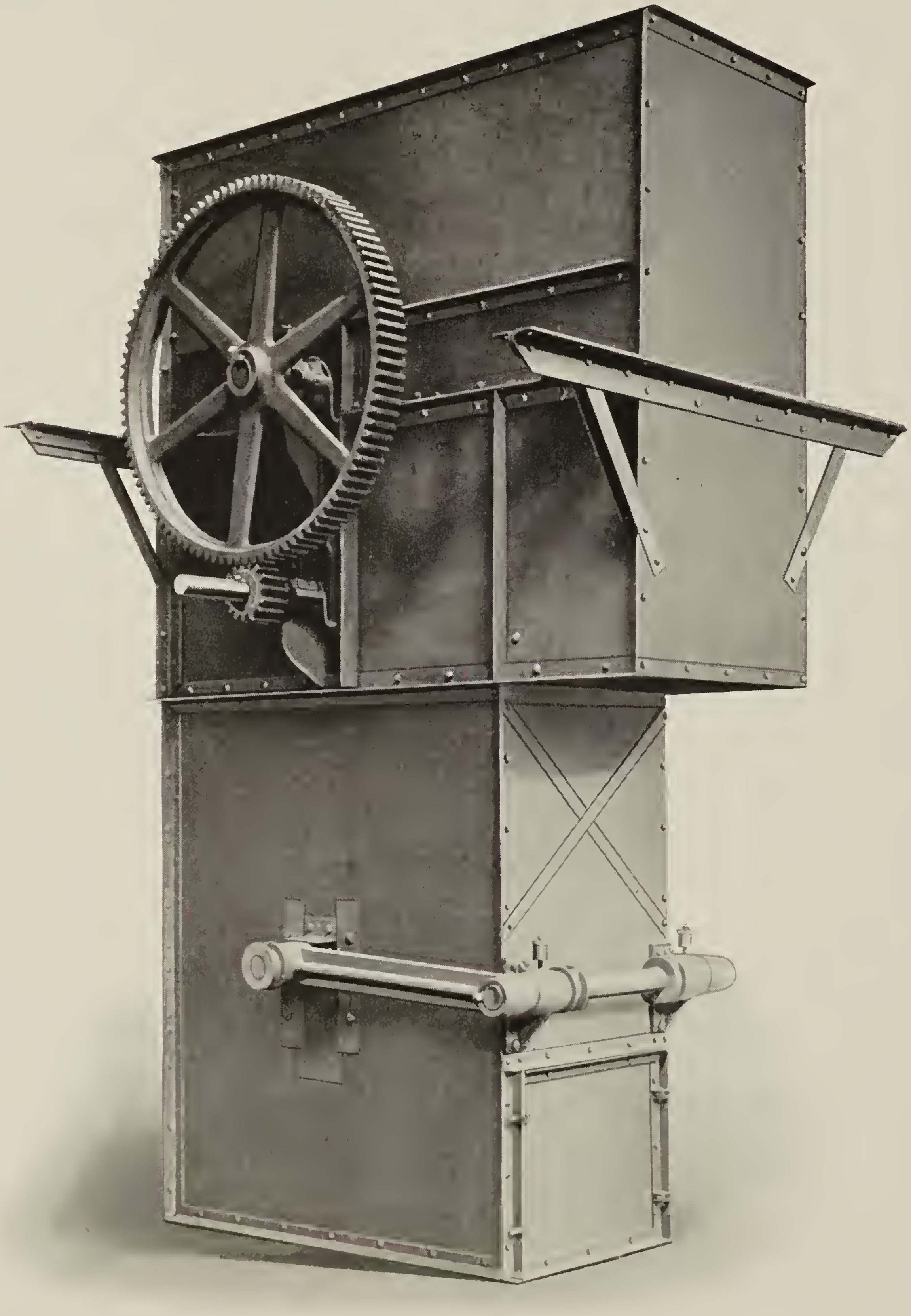


Illustration Shows the Driving Head and Elevator Boot Used on the American Elevators No. 449, No. 483 and No. 499

American No. 449 Bucket Elevator

THIS elevator is designed especially for use with the American No. 384 Grinder and is furnished in any height required, according to the installation.

Standard equipment includes the driving head and boot complete with 24″ steel elevator buckets and a 26″ elevator belt. Steel casing between the head and boot is furnished when specially ordered.

Foot pulley in the elevator is mounted on a hinge connection arranged so that the weight of the pulley takes up the slack in the belt and no special take-up attachments are required.

GENERAL SPECIFICATIONS

Driving Pulley	36″ x 8″	Driving Gear	48″ Dia.
Speed	270 R.P.M.	Driving Pinion	7′ Dia.
Head Pulley	40″ x 28″	Driving Shaft	2½″ Dia.
Foot Pulley	36″ x 28″	Head Shaft	3½″ Dia.

American No. 483 Bucket Elevator

THIS elevator is designed especially for use with the American No. 418 Grinder and is furnished in any height required, according to the installation.

Standard equipment includes the driving head and boot complete with 20″ steel elevator buckets and a 22″ elevator belt. Steel casing between the head and boot is furnished when specially ordered.

Foot pulley in the elevator is mounted on a hinge connection arranged so that the weight of the pulley takes up the slack in the belt and no special take-up attachments are required.

GENERAL SPECIFICATIONS

Driving Pulley	36″ x 6″	Driving Gear	35″ Dia.
Speed	230 R.P.M.	Driving Pinion	6″ Dia.
Head Pulley	30″ x 24″	Driving Shaft	1$\frac{15}{16}$″ Dia.
Foot Pulley	24″ x 24″	Head Shaft	2$\frac{15}{16}$″ Dia.

American No. 499 Bucket Elevator

THIS elevator is designed especially for use with the American No. 482 Grinder and is furnished in any height required, according to the installation.

Standard equipment includes the driving head and boot complete with 16″ malleable iron elevator buckets and an 18″ elevator belt. Steel casing between the head and boot is furnished when specially ordered.

Foot pulley in the elevator is mounted on a hinge connection arranged so that the weight of the pulley takes up the slack in the belt and no special take-up attachments are required.

GENERAL SPECIFICATIONS

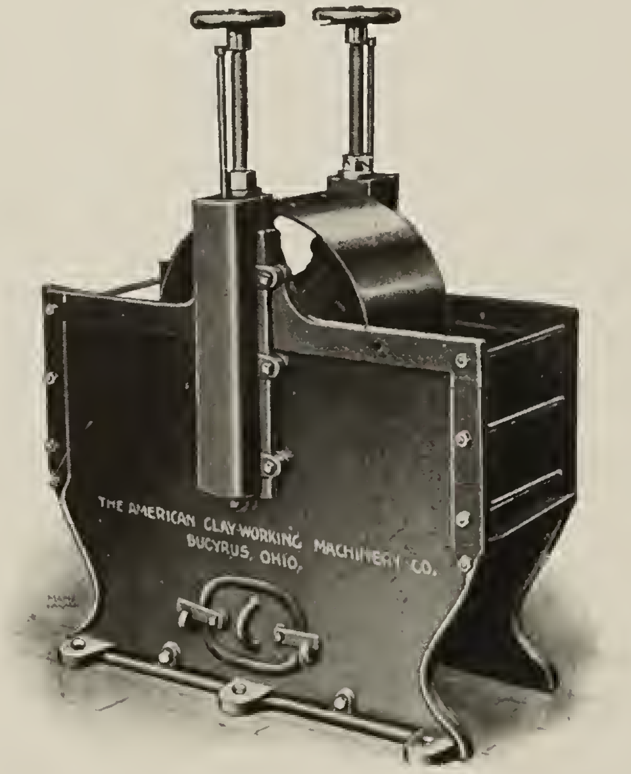
Driving Pulley	36″ x 6″	Driving Gear	35″ Dia.
Speed	230 R.P.M.	Driving Pinion	6″ Dia.
Head Pulley	30″ x 20″	Driving Shaft	1$\frac{15}{16}$″ Dia.
Foot Pulley	24″ x 20″	Head Shaft	2$\frac{15}{16}$″ Dia.

American Bucket Elevator and Boot with Adjustable Dust-Proof Bearings

OUR Elevators are specially designed for conveying ground clay from the Dry Pan to the Screen in the upper part of the building. In the construction of our Bucket Elevators we use a belt two inches wider than the buckets. This makes it impossible for the buckets to drag and catch on the sides and pull off of the belt. The buckets when attached to the belt are 18″ from center to center. In the construction of the Elevator Boot, which is made of iron and steel, we do not use a solid drum, as experience has shown us that the clay will accumulate on the drum and have a tendency to make the belt travel to one side, causing it to rub on the side of the boot. We use a double-arm spider pulley in place of a drum. This makes it impossible for the clay to accumulate and interfere with the correct travel of the belt. The boot is fitted with adjustable take-up boxes and these boxes are provided with a special stuffing box, which prevents the dirt or dust from working into the bearings. This is a special feature and one which saves a great deal of trouble.

The Elevator Boot as a general thing is located in a pit where it is inconvenient to inspect, consequently it receives as little attention as it is possible to give it. With our special arrangement for supplying oil to the bearings in connection with the stuffing box our Elevator Boot will give long and satisfactory service.

We furnish all Elevator Fixtures, Boot, Cups, Head Shaft, Bearings, Gears and Driving Pulley. Each Elevator is carefully inspected before shipment.



SPECIFICATIONS

Construction

This elevator is made of selected material. The boot is made up of cast iron sides and steel plates. Spanner rods hold the side frames in correct position. The bearings are ample and inclosed. A cleanout door is provided. Adjustable take-up boxes and spider drum are improved features. Belting is of good quality and buckets are made of malleable iron.

Shafting

Diameter of head shaft 2″. Diameter of driving shaft 2″. Diameter of foot shaft 2″.

Bearings

Length of head shaft bearings 5¼″. Length of foot shaft bearing 5¼″.

Pulleys

Diameter of head pulley 24″. Diameter of foot spider 20″ for small buckets and for large buckets is 24″.

Straight Gear

On the straight geared elevator the gear is 20.5″ diameter, 3.5 face, 1.25″ pitch. Pinion 7.25″ diameter. Gear ratio 3 to 1.

Bevel Gear

On the bevel geared elevator the gear is 21.25″ diameter, 3.5 face, 1.25″ pitch. Pinion 7.25″ diameter. Gear ratio 3 to 1.

Driving Pulley

This elevator is furnished with driving pulley 24″ diameter, 6″ face.

Speed

Speed of driving pulley 113 R.P.M. Speed of elevator belt 236′ per minute.

Cup Spacing

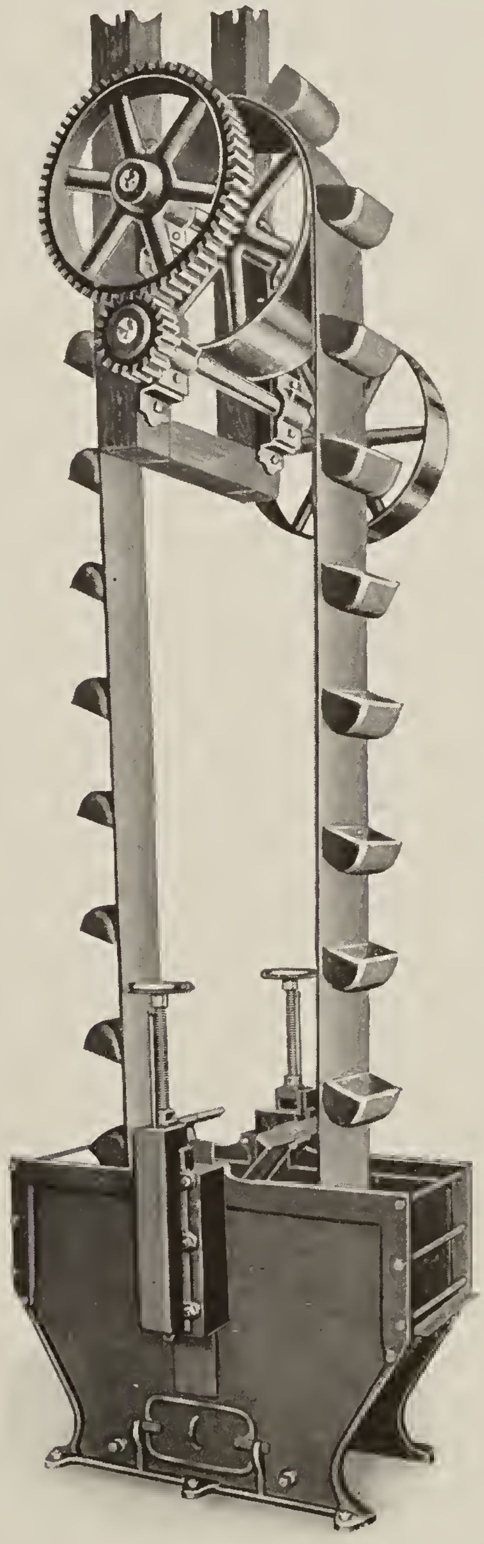
The standard spacing of cups is 18″ centers.

Cups

Standard cups are Style A malleable iron and are furnished in the following sizes: 8″ x 5″, 10″ x 6″, 12″ x 7″, 14″ x 8″, 16″ x 8″, 18″ x 10″.

DIMENSIONS FOR STANDARD CUP ELEVATOR

Width of head over all—straight gear	6′
Length of head over all—straight gear	5′ 9″
Width of head over all—bevel gear	4′ 3″
Length of head over all—bevel gear	7′
Height above center of head shaft	2′ 3″
Width of boot over all	3′ 1″
Length of boot over all	3′ 3″
Height from floor to center of boot	1′ 6″
Length from center of elevator to center of driving pulley—straight geared	2′ 4″
Length from center of elevator to end of driving shaft on pulley end—straight geared	4′ 6″

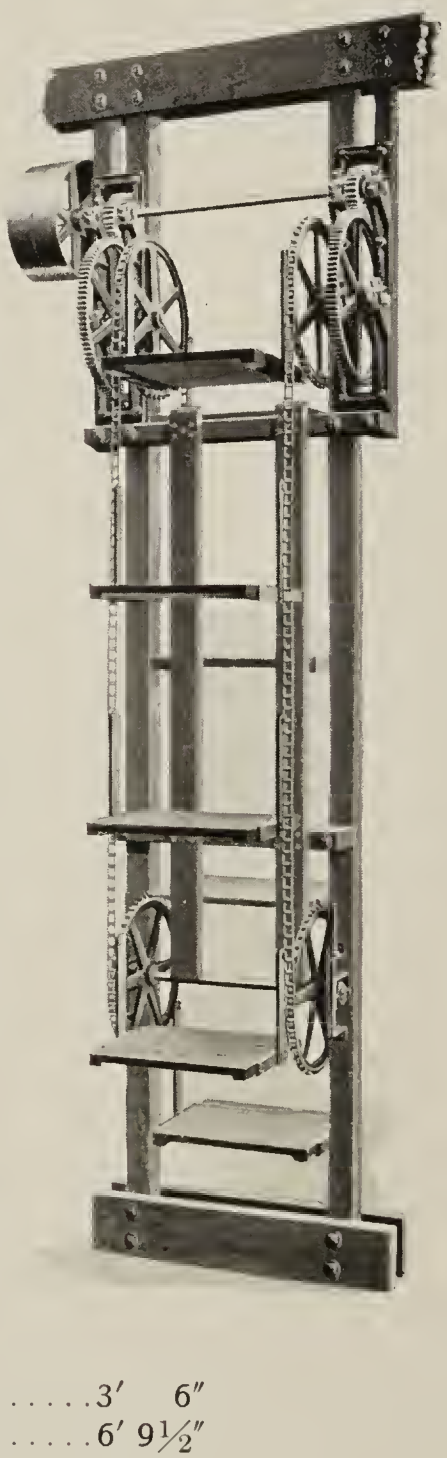


American No. 326 Tile Elevator

THIS elevator is especially designed for conveying Tile, Pipe and Hollow Ware from one floor to another. The construction of this elevator is such that if the operator on the upper floors fails to remove the ware it simply passes on over and comes down on the other side. The dry ware may be lowered from the upper floors at the same time the green ware is being elevated to the upper floors.

The frame of elevator is constructed of wood, being furnished by the customer unless otherwise specified.

SPECIFICATIONS



Construction

The elevator frame is made of wood. The driving head is made up of two cast iron one-piece gear frames which support the head sprockets, gears and driving pulley.

The adjustable take-up bearings which carry the sprockets at the lower end are made of cast iron and are of our heavy pattern. The chain carrying the trays is extra heavy with links of the pintle type.

We furnish the elevator complete except the wood frame, which must be made to suit conditions.

The standard length of elevator is 20′ center.

Shafting

All shafting is steel 2″ diameter.

Bearings

All bearings are babbitted; the driving shaft and head shaft bearings are 4″ long, the take-up bearings are 3″ long.

Trays

The trays are made of wood with cleats at each end to rest on hangers. Size of trays 16″ wide, 24″ long, and will take on 12″ ware. The hangers are made with 24″ drop spaced 48$\frac{9}{16}$″ apart.

Gearing

Cast iron 2½″ face, 1″ pitch, pinion 4½″ diameter, gear 26$\frac{7}{16}$″ diameter. Ratio 6 to 1.

Chain Sprocket Wheels

Cast iron 24½″ diameter.

Driving Pulley

This elevator is furnished with a tight and loose pulley 24″ diameter. 4½″ face.

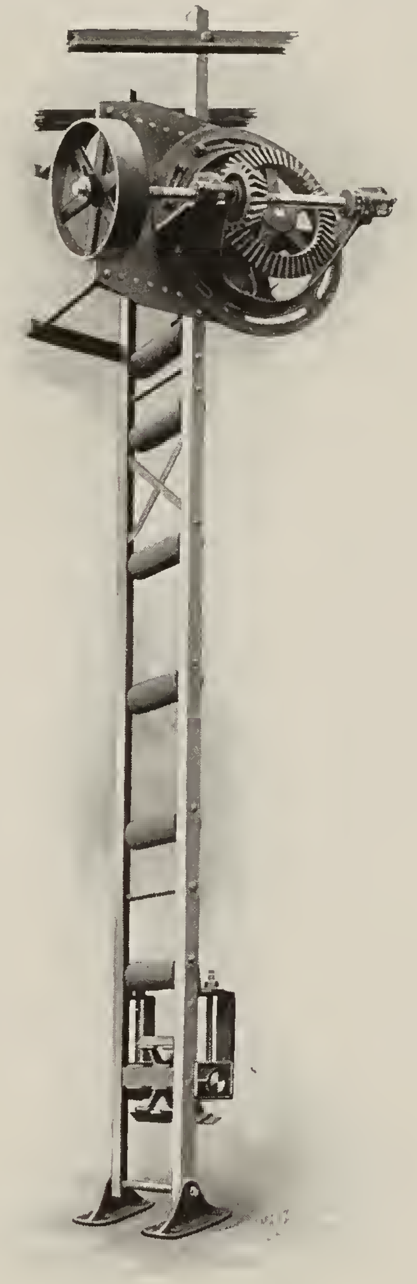
Speed

Speed of driving pulley 60 R.P.M.

DIMENSIONS

Width over all	3′ 6″
Length over all	6′ 9½″
Height from center of head shaft	2′ 3¾″
From center of take-up shaft to floor	3′ 7″
From center of elevator to center of driving pulley	3′ ½″

American Waste Clay or Wet Clay Elevator



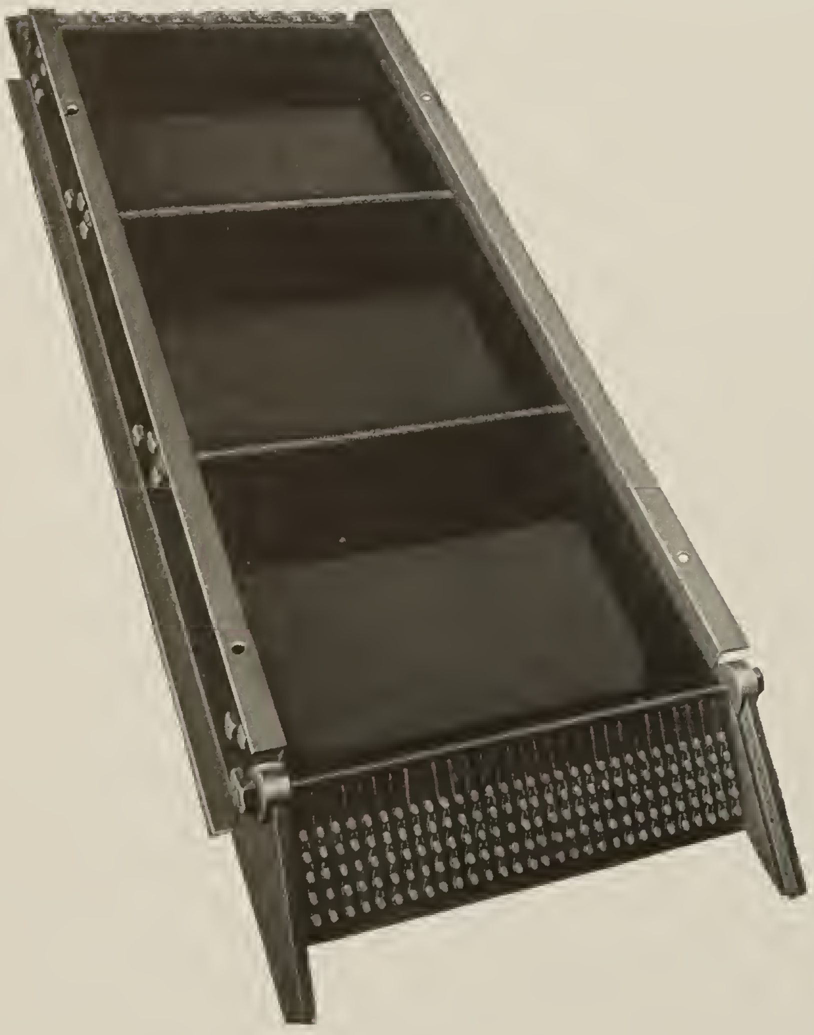
WASTE-CLAY elevators are, as a rule, used for elevating the clippings and imperfect brick from the cutter and off-bearing table. They are delivered to a conveyor, which conveys them to the pug mill. The illustration shows one style of the head of a bevel-geared waste-clay elevator with swivel attachment. This attachment makes it possible to stand the elevator at an angle to suit conditions and adjust the driving shaft so that it is level with the shaft it is to be driven from. This elevator is also made with the head pulley driven with spur gears, similar to our style "B" conveyor.

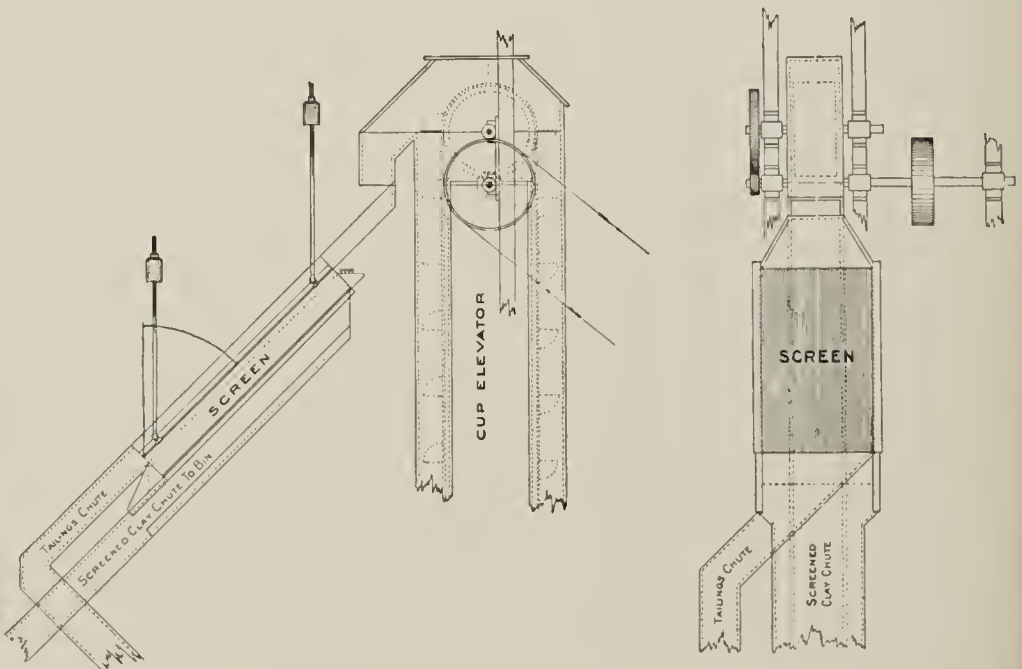
The frame consists of angles well braced and tied together, the side members extending above the head pulley or spider so that it can rest against a timber of the building. These side members also extend below the foot take-up pulley and are supplied with hinged foot castings to be fastened to the floor. To the side frames are bolted small bearings to receive the gudgeons of wood rollers which are placed at intervals to support the belt. This belt is provided with style "C" elevator buckets, which are designed to handle plastic clay. They are made so as to form a shelf at right angle with the belt, the ends being closed by the metal being bent and riveted to the parts, thus forming a triangle.

The height of these elevators is made to suit conditions. Our standard waste-clay elevator is provided with 18″ belt and 16″ buckets. Our standard wet-clay elevator is provided with 20″ belt and 18″ buckets.

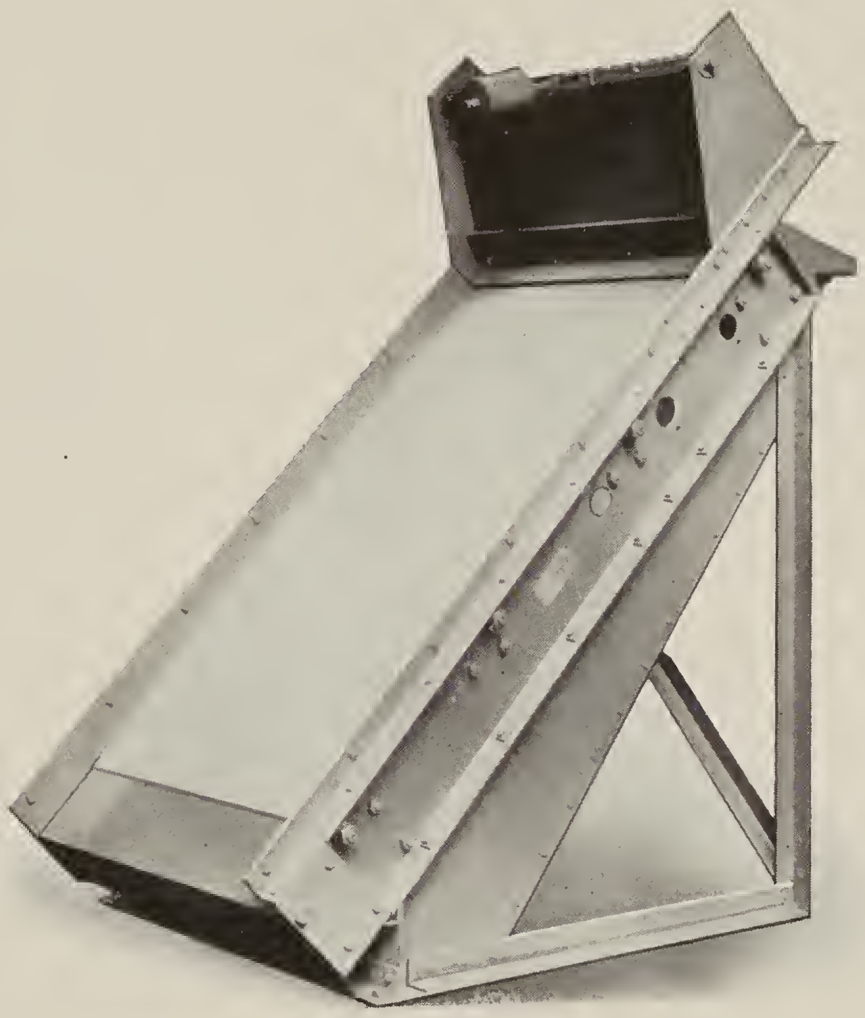
American No. 87 Piano Wire Screen

THE American No. 87 Piano Wire Screen is a very successful and economical Screen for screening clay, sand and similar material. It has been thoroughly tried and tested and gives splendid results. It will screen more material at less expense and will require less room to install than any other screen as yet invented. As the name implies the Screen is made of heavy steel piano wires. These wires are strung on a strong, substantial frame. The wires are drawn to a high tension and are firmly secured so that they cannot slip. One piece of wire will string two wires on the Screen as the wire is looped over an iron plug at one end and the two ends of the wire are secured to a strong set screw at the opposite end of the Screen. The wires can be drawn to any tension required. At each end of the frame the wires are drawn over a heavy rod which is threaded to suit the space required between the wires. The wires lay in the threads cut in these rods, and by cutting the rods with larger or smaller threads, the openings between the wires can be arranged to suit the conditions under which the screen is to be used. Our Standard construction allows 3/32″ space between the wires, and this we find will screen clay sufficiently fine for all general purposes, and at the same time give a good capacity. Threaded rods are also placed in the middle of the Screen to prevent the wires from spreading apart. The Screen is usually set at an angle of about 45 degrees and it is generally set so that the angle of the Screen can be readily changed if it becomes desirable to do so, owing to the condition of the clay. The Screen should be set so that the elevator delivers the clay to a spreading board at the top of the Screen and not directly on to the wires of the screen. By using the spreading board the clay is delivered to the Screen constantly and is evenly spread over the entire surface, so that it screens more rapidly. There are no cross-wires in this screen and consequently no tendency to clog, if the clay is damp. The American No. 87 Piano Wire Screen is 2′ 6″ wide by 6′ long, and under ordinary conditions will screen sufficient clay for 3,000 to 5,000 bricks per hour.





Method of Setting American No. 87 Piano Wire Screen



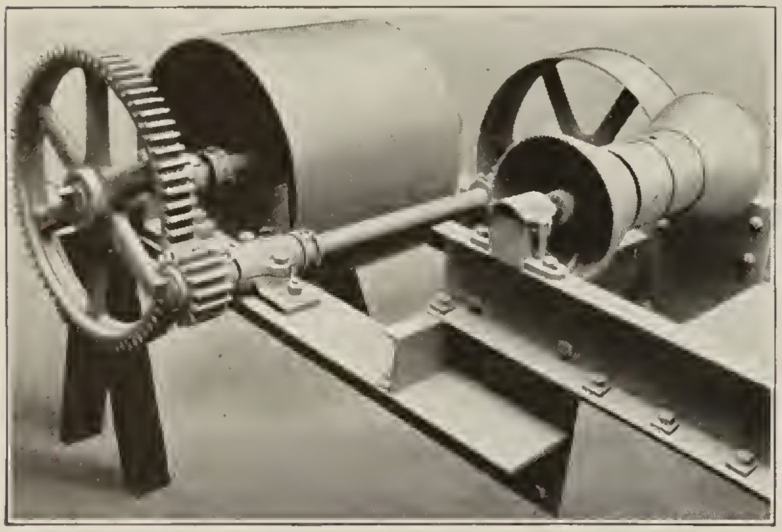
American No. 497 Piano Wire Screen

OWING to the demand for a Screen of larger capacity, we have developed the No. 497 Piano Wire Screen. The construction of this Screen is very similar to the No. 87 Piano Wire Screen but the method of mounting has been improved. The No. 87 Screen is designed to be hung from above, while the No. 497 Screen is furnished mounted on a structural steel frame designed so that it will set on the floor above the clay bin. The screening surface is 3′ 6″ wide and 6′ long. The standard spacing for the wires is 3/32″. This spacing may be varied when required. When so specified, the machine can be furnished with a beater attachment to be used in wet weather for dislodging wet particles which may adhere to the wire. The standard screen is furnished without the beater attachment.

CLEARANCE DIMENSIONS

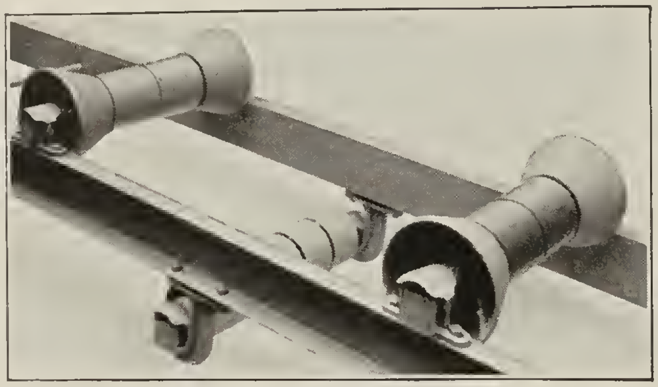
Width over all	4′ 11″	Length horizontally	6′ 3″
Width of frame	3′ 11″	Height	7′ 6½″
Width from center of frames to center of pulley	2′ 6″	Weight	2,200 lbs.

American No. 315 Conveyor



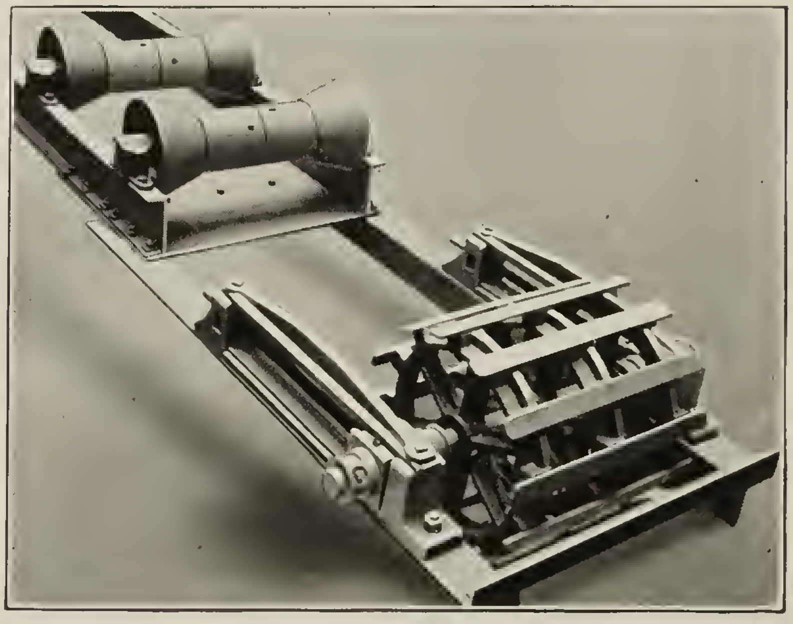
Part of Head Section

Bearing for Concentrating Roll Shaft, Showing Wooden Bearing



Part of Filler Section

Concentrating Roll Head with Oilless Wood Bushing



Part of Foot Section

American No. 315 Conveyors

THE American Nos. 315 and 315-A Conveyors have been standardized to the extent that they consist of three sections: The foot shaft, pulley and take-ups with four concentrating rolls and one return idler constitute the first section. The center sections are 16′ long and carry four concentrating rolls and one idler. They are matched to the foot section and to each other so that a conveyor may be made up of any desired length from standard sections. The head section may be attached directly to a standard section or to an odd length to make up the completed conveyor. No. 315 is for 18″ belt and No. 315-A is for 24″ belt.

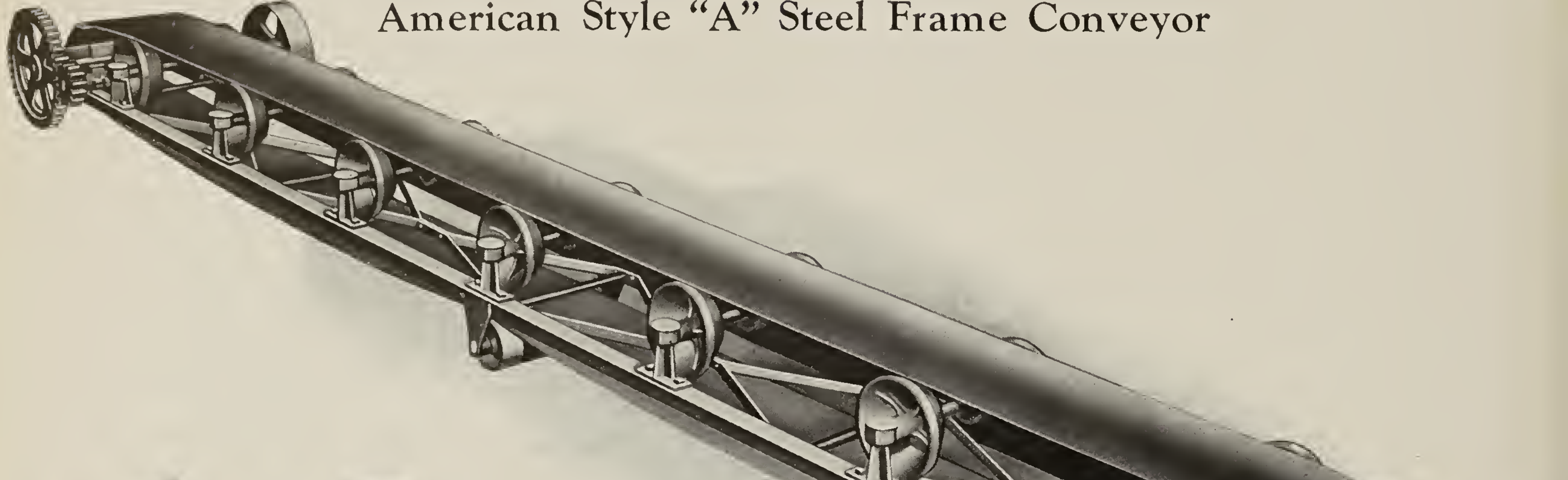
Conveyors are generally located in places difficult of access. They necessarily have many bearings and it is not convenient to give them frequent attention. The American No. 315 conveyors are equipped with bearings that are adapted to those conditions. Head and foot shafts have automatic grease cups that furnish a constant supply of lubricant over a long period of time. They are filled by means of a grease gun without removing the cover and there is an indicator showing when filling is required. The guide and concentrating roll heads are bushed with an oilless sleeve bearing and require no additional lubricant.

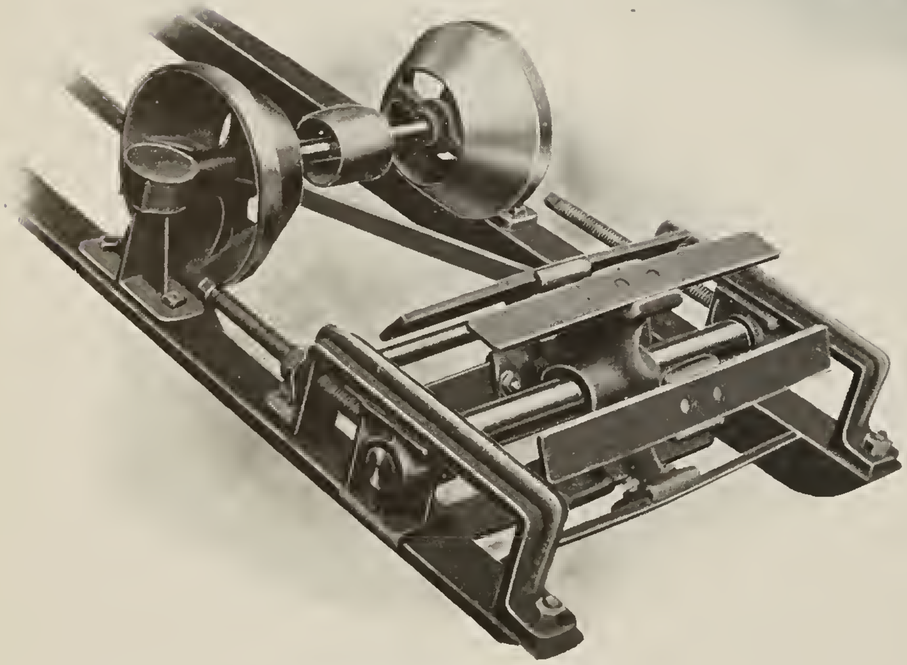
The concentrating shaft bearings consist of a cast iron case and hinged cover with a wooden block inserted which forms a "self-oiling" bearing that holds sufficient oil to last for a long period of time. Many of these bearings have been in constant use for more than 15 years and appear to be good for an indefinite period of time.

The head and foot sections are mounted on heavy angle iron sills and center sections on heavy channels that, when assembled, form a complete, self-contained conveyor ready for supports.

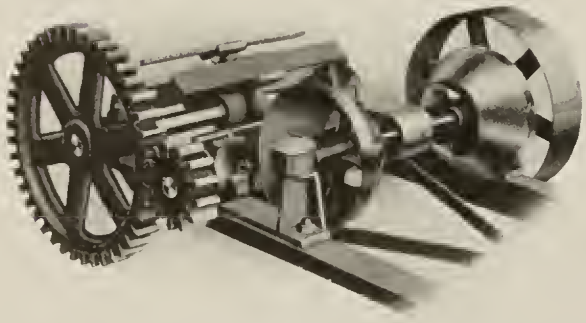
Parts for the No. 315 18″ and the No. 315-A 24″ are usually in stock and conveyors of usual lengths can be made up on short notice.

American Style "A" Steel Frame Conveyor

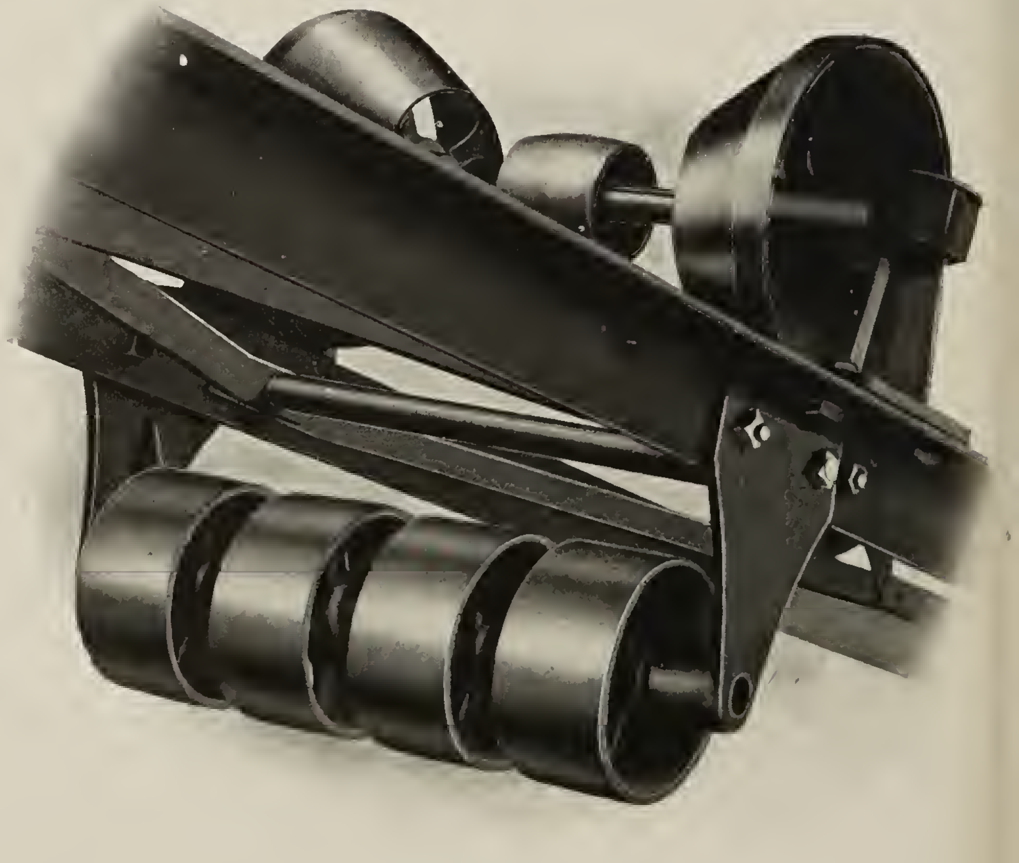




Adjustable Foot Pulley



Head Pulley



Concentrating Rolls

W. A. RIDDELL COMPANY

BUCYRUS OHIO

American Style "A" Steel Frame Conveyor

THE American Style "A" Steel Frame Conveyor is built in two standard sizes, 18″ in width and 24″ in width. The length of the conveyor may be made to suit requirements. These conveyors are built with a substantial steel frame and they are light, strong and durable. They are equipped with concentrating rolls which form the belt into a trough, carrying the clay in the center of the belt and preventing the clay from dropping off at the sides of the belt in transit.

SPECIFICATIONS

Steel Frame

The steel frame for the conveyor is built of angles 3″ x 2½″ x ¼″. These are securely braced with a lattice work of steel.

Driving End

The head gearing frame is bolted to the steel frame and contains the bearings for the head shaft, the driving shaft and pedestal bearings for one concentrating roll. Bearings for the head shaft and driving shaft on the 18″ conveyor are 3½″ long and on the 24″ conveyor 4″ long. The head pulley on the 18″ conveyor is 11″ diameter and on the 24″ conveyor 16″ diameter. Head shafts and driving shaft on the 18″ conveyor are 1½″ diameter and 2″ diameter on the 24″ conveyor.

Gearing

Gears are made of American Gear Metal. On the 18″ conveyor the master gear is 16¾″ diameter and 2″ face and 1¼″ pitch. The driving pinion is 5¼″ diameter. On the 24″ conveyor the master gear is 20½″ diameter, 3″ face and 1⅛″ pitch. The pinion is 6½″ diameter. Ratio of gearing on 18″ conveyor 3.2 to 1. Ratio of gearing on 24″ conveyor 3 to 1.

Gearing for Bevel Geared Conveyor

When the conveyors are arranged for bevel geared drive, the master gear on the 18″ conveyor is 18″ diameter, 3″ face, 1⅛″ pitch. The pinion is 8″ diameter. On the 24″ conveyor the master gear is 21¼″ diameter, 3½″ face, 1¼″ pitch. The pinion is 7¼″ diameter. Ratio of gearing on 18″ conveyor 2¼ to 1. Ratio of gearing on 24″ conveyor 3 to 1.

Take-up Pulley

At the lower end of the frame is bolted a take-up bearing in which is mounted the foot pulley or reel constructed of cast iron spiders and steel slats. The diameter of the take-up pulley on the 18″ conveyor 11″; diameter of take-up pulley on 24″ conveyor 16″. Diameter of shaft on 18″ conveyor 1½″. Diameter of shaft on 24″ conveyor 2″. Length of take-up bearings 3⅛″. Length of take-up 8″ on 18″ conveyor and 7½″ on 24″ conveyor.

Concentrating Rolls

The concentrating rolls are spaced 3′ apart. These rolls are mounted on shafts 1″ diameter. The outside or cone pulleys are 10″ diameter. These cone pulleys are loose on the shaft and turn with the belt. The center pulleys which support the center of the belt are keyed to the shaft and are 3½″ diameter.

Pedestal Bearings for Concentrating Rolls

The pedestal bearings for the concentrating rolls are cast iron. They are made in the shape of the letter U. The concentrating roll shafts rest in these bearings and they are covered with a dust-proof cast iron cap. These bearings are made for lubricating with grease. The dust-proof cap can be removed and the bearings filled with grease, which will run for a long period of time without being renewed.

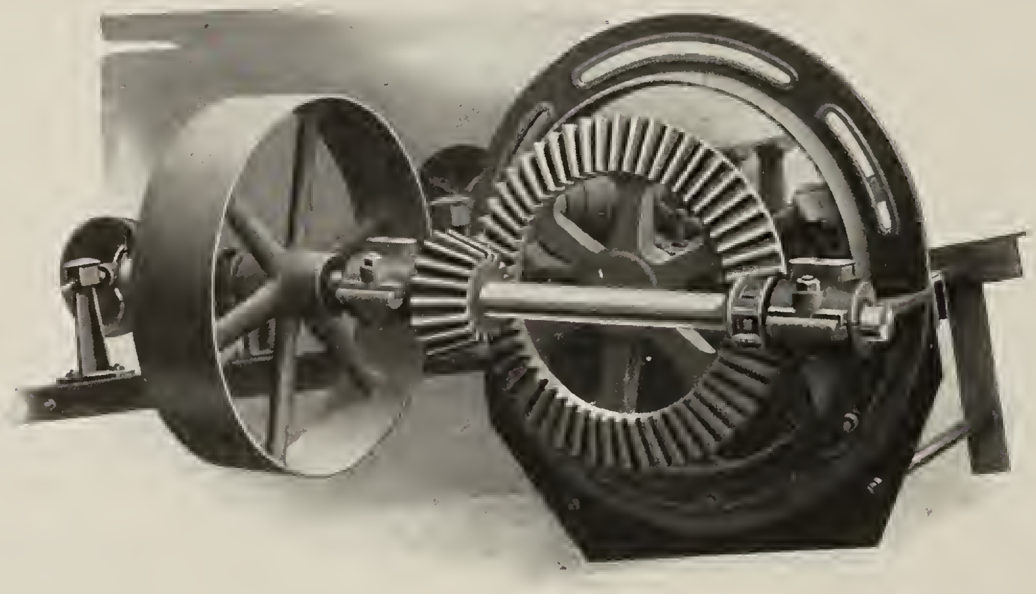
Idler Rollers

The lower side of the conveyor frame is equipped with idler rollers suspended in suitable bearings. These idler rollers are for supporting the belt on the under side of the conveyor. They are spaced 20′ apart. The idler rolls are 3½″ diameter and mounted on 1″ shaft. They are supported in substantial bearings arranged to be lubricated with grease.

Driving Pulley

The conveyors are fitted with plain driving pulleys and on the 18″ conveyor the driving pulley is 16″ diameter, 4″ face and the speed is 100 R.P.M. When the conveyor is bevel geared the speed is 70 R.P.M. The driving pulley on the 24″ conveyor is 24″ diameter, 6″ face and the speed is 78 R.P.M. On conveyors longer than 75′ the driving pulley is 24″ diameter, 8″ face.

Adjustable Bevel-Geared Drive for Conveyors

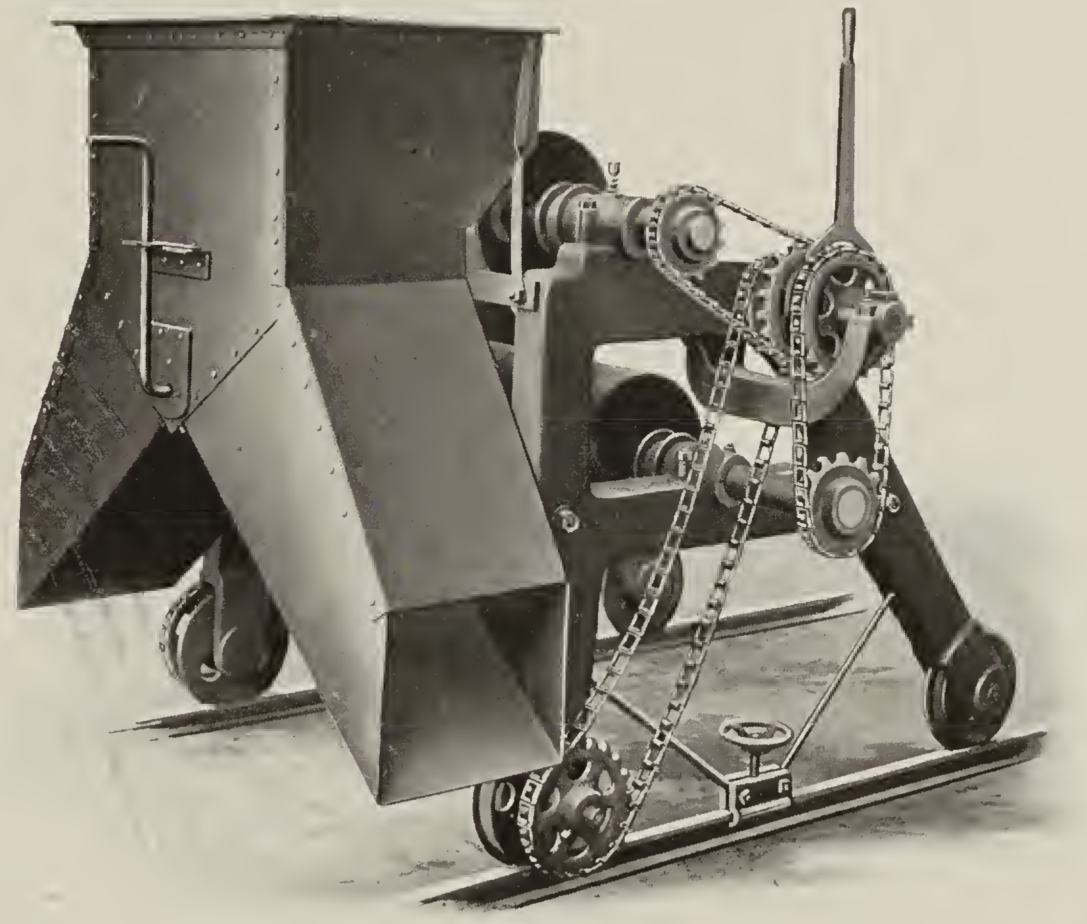


OWING to the large number of conveyors we furnish, and the difficulty of our customers furnishing us the angle of the conveyor when installed, we have designed an adjustable bevel-gear attachment, which can be set at any angle to suit the condition and bring the driving shaft in line with the shaft it is to be driven from.

It consists of a circular plate with elongated holes, the plate being firmly secured to the steel frame of the conveyor. Bolted to this circular plate is the bevel gearing frame which swivels on the head drum shaft. By this arrangement the driving pulley of the conveyor can be set to suit any angle at which the conveyor may be placed.

American No. 111 Automatic Tripper

THE Automatic Tripper is used in connection with a conveyor for distributing clay in a storage shed. The conveyor is usually located in the center of the shed. The Tripper is made with two pulleys, one above the other, of sufficient width to suit the conveyor belt. The upper run of the belt passes over the upper surface of the upper pulley then down and around the back and bottom of the lower pulley then on a straight line to the end of the conveyor, thus forming an off-set, at which point is provided a receiver having chutes extending to each side of the conveyor. The receiver is provided with a valve so that the material can be delivered through the chute at either side. The pulleys and chutes are mounted on a neat frame on wheels which run on a track parallel with the conveyor. The tripper is driven by sprocket chains so arranged that by shifting a lever it is moved back and forth by power which is received from the conveyor belt passing over the pulleys. Rail clamps hold the tripper to the track so that it can move only when desired.



SPECIFICATIONS—18-INCH BELT

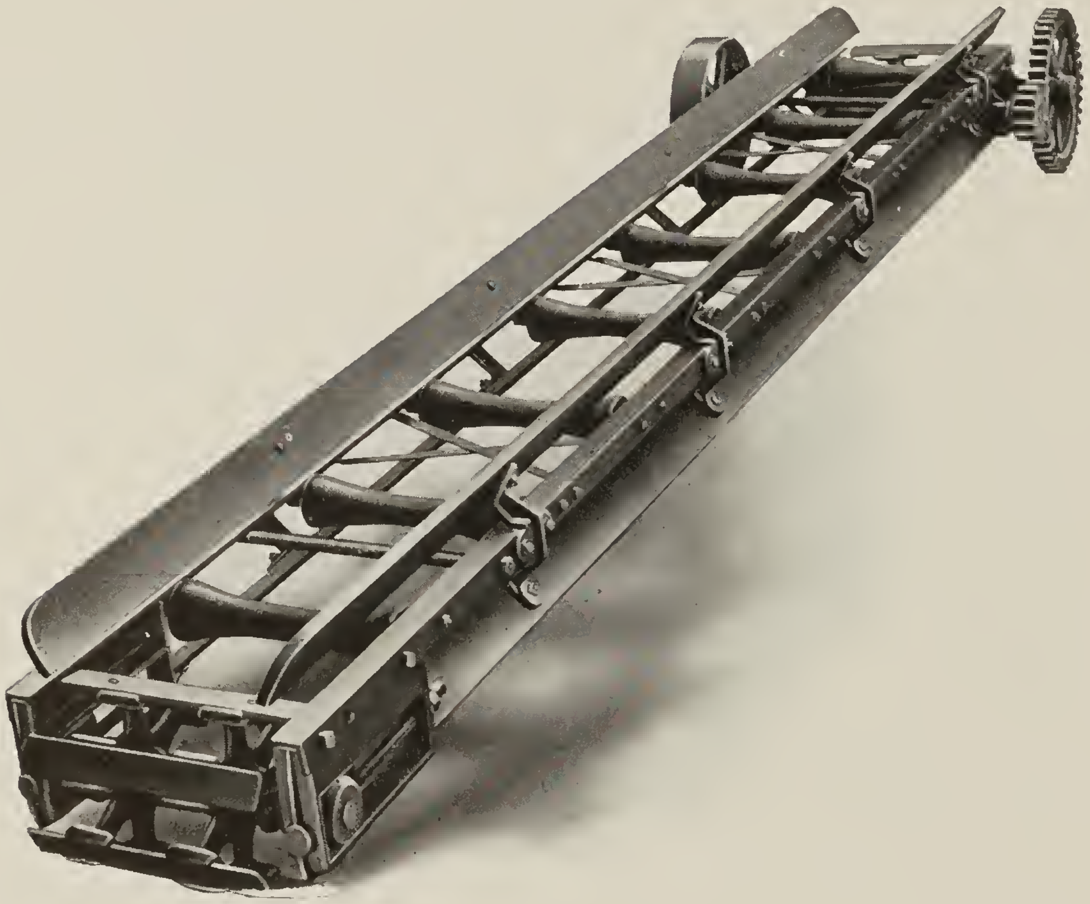
Diameter of pulley shaft	2½″
Length of pulley shaft bearings	6″
Diameter shaft for propelling tripper	1¼″
Diameter of belt pulleys	12″
Face of belt pulleys	21½″
Diameter flanged track wheels	10″
Size of chain for propelling tripper	No. 52
Speed of tripper in feet per minute, when belt speed is 100′ per minute	48
Size of discharge spouts	12″ x 15″
Weight	1,500 lbs.

SPECIFICATIONS—24-INCH BELT

Diameter of pulley shaft	2½″
Length of pulley shaft bearings	6″
Diameter shaft for propelling tripper	1¼″
Diameter of belt pulleys	12″
Face of belt pulleys	2′ 3½″
Diameter flanged track wheels	10″
Size of chain for propelling tripper	No. 52
Speed of tripper in feet per minute, when belt speed is 100′ per minute	48
Size of discharge spouts	12″ x 15″
Weight	1,650 lbs.

American Style "B" Belt Conveyor

THE American Style "B" Belt Conveyor is built in two widths, 14″ and 18″, and in various lengths up to 100′ inclusive. Side frames are made from 2″ x 3″ x ¼″ angles to which the other parts are attached. The head is back geared.



SPECIFICATIONS

Spur Geared

The pulley is 16 x 4 for lengths up to 50′ and runs 100 R.P.M.

For lengths between 50′ and 100′ the pulley is 24 x 6 and should run 80 R.P.M.

Bevel Geared

For lengths up to 50′ the pulley is 16 x 4 and should run 70 R.P.M.

For lengths between 50′ and 100′ the pulley is 24 x 6 and should run 80 R.P.M.

The take-up drum is adjustable to compensate for stretch of belt and to guide the belt centrally.

Crusher and Disintegrator Department

American No. 266-A Smooth Roll Crusher

THIS crusher is designed for grinding Plastic clay that carries too much moisture to permit dry grinding and screening. It is built substantially in every detail and is designed for long and hard service as well as for large capacity.

Frame

The frame is made of two heavy cast iron end pieces with two heavy steel channel bars for each side of the frame on which the casting carrying the bearings is mounted. The frame is securely bolted together so that it is rigid and will not spring.

Bearings

The bearings are 12″ long and 5″ in diameter, well babbitted with a good grade of babbitt metal. The bearings on one roll are rigid while on the other roll the bearings are made to slide. These sliding bearings are backed up with heavy springs and draw bolts 1½″ in diameter, these springs take the strain of keeping the rolls together and the space between the rolls is maintained by means of sheet steel plates or shims between the bearings which are held in place by means of a through bolt and serve as a bumper, should the rolls open and permit the passage of a piece of metal. The space between the rolls is regulated by the number of shims between bearings.

Scrapers

Sheet steel scrapers are provided on each roll for the purpose of keeping it clean. These scrapers are adjustable from the outside so that the arrangement is very convenient for adjustment.

Rolls

The rolls are 36″ in diameter, 30″ face, they are made with a chilled cast iron shell 3″ thick, mounted on separate heads, keyed to the shaft. The shell for the roll is cast in a chill and is very hard, to resist wear, at the same time, it can be re-ground repeatedly and will give good service over a long period of time. As the rolls are short in proportion to their diameter the wear is more easily distributed over the entire face of the roll so that repeated regrinding or renewals is obviated. Each roll is driven independently with a belt so that there is no limit to the adjustment for the space between the rolls or in the variation of the speed of the roll.

Heads

The heads are conical in shape and are accurately machined. The end of the shells have pockets filled with soft metal (Babbitt), this soft metal is cast in the shell over jigs in such a manner as to make them interchangeable and self-centering insuring accuracy to a high degree and facilitating easy assembly and renewals.

Lugs prevent any slippage between the shell and the heads.

Shafts

The shafts on which the rolls are mounted are 5″ diameter; they are forged steel turned true to size.

Driving Pulleys

Each roll is fitted with a cast iron driving pulley 36″ x 10″. It is usually customary to drive one roll at 110 R.P.M. and the other at 120 R.P.M. Any variation in the speed of the rolls may be secured if found beneficial for capacity or quality in grinding.

Capacity

Capacity of this machine will vary from 15 to 30 tons per hour depending upon the condition of the material and the degree of fineness to which it must be ground.

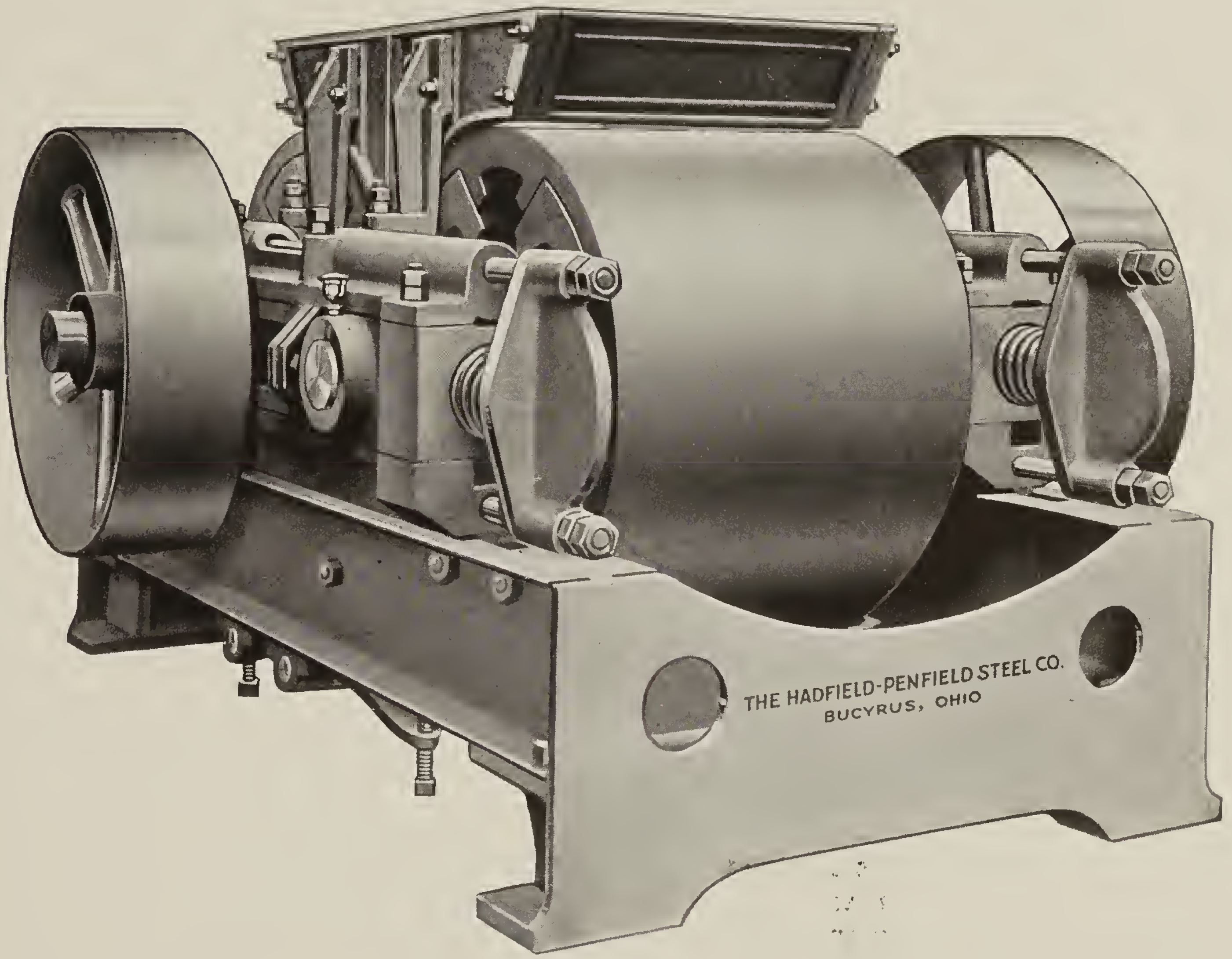
Power

Power required will vary from 25 H.P. to 40 H.P. according to the conditions under which the machine is operating.

DIMENSIONS

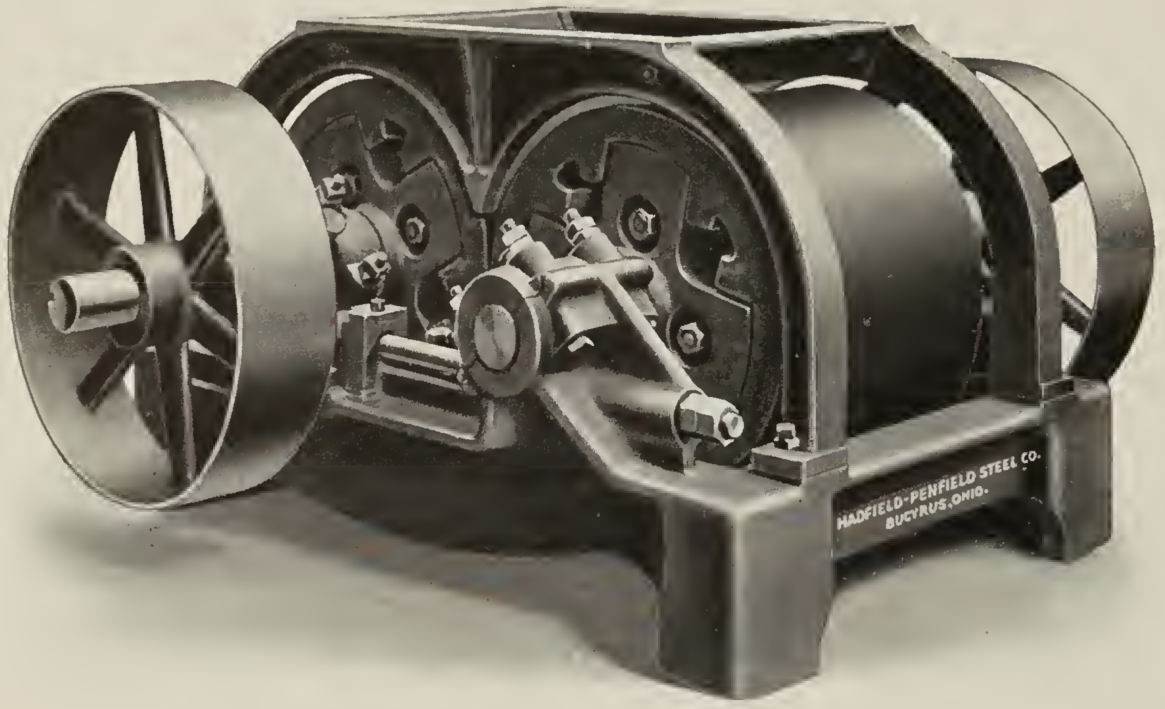
Length over all	8′ 2″
Width over all	6′ 3½″
Width center to center of pulleys	5′ 5½″
Height over all	4′ 11″
Height to center of shafts	2′ 8″
Weight	16,200 lbs.

American No. 266-A Crusher



American No. 460 Smooth Roll Crusher

THIS crusher is designed for grinding Plastic clay that carries too much moisture to permit dry grinding and screening. It is built substantially in every detail and is designed for long and hard service as well as for large capacity.



American No. 460 Crusher

SPECIFICATIONS

Frame

The frame is a heavy one-piece casting, machined for the adjustable bearings.

Bearings

The bearings are 11″ long and 4″ in diameter and lined with anti-friction metal. One pair of bearings is cast integral with the frame. The other pair is gibbed to the frame to provide adjustment for the necessary degree of fineness and for taking up wear of rolls. Removable steel shims between the adjustable bearing and bumper keep the rolls at proper distance from each other and 1½″ draw rods through bearings keep the adjustable bearings in position and take the strain of crushing.

This construction permits the use of springs for taking the load of keeping the rolls together where necessary. It is best to dispense with springs where possible and they are supplied only when ordered as a better grade of work is done without them.

Scrapers

The scrapers may be adjusted from the top of the frame and have renewable wearing parts.

Rolls

The rolls are 28″ in diameter, 24″ face. They are made with a chilled cast iron shell, 2¼″ thick, mounted on separate heads, keyed to the shaft. The shell for the roll is cast in a chill and is very hard, to resist wear. At the same time it can be re-ground repeatedly and give good service over a long period of time. As the rolls are short in proportion to their diameter, the wear is more easily distributed over the entire face of the roll so that repeated regrinding or renewals is obviated.

Each roll is driven independently with a belt so that there is no limit to the adjustment for the space between the rolls or in the variation of the speed of the roll.

Heads

The heads are conical in shape and are

American No. 460 Smooth Roll Crusher

accurately machined. The end of the shells have pockets filled with soft metal, (Babbitt) this soft metal is cast in the shell over jigs in such a manner as to make them interchangeable and self-centering insuring accuracy to a high degree and facilitating easy assembly and renewals.

Lugs prevent any slippage between the shell and the heads.

Shafts

The shafts on which the rolls are mounted are 4″ in diameter; they are forged steel turned true to size.

Driving Pulleys

Each roll is fitted with a cast iron driving pulley 30″ x 8″. It is usually customary to drive one roll at 180 R.P.M and the other at 200 R.P.M. Any variation in the speed of the rolls may be secured if found beneficial for capacity or quality in grinding.

Capacity

Capacity of this machine will vary from 10 to 15 tons per hour, depending upon the condition of the material and the degree of fineness to which it must be ground.

Power

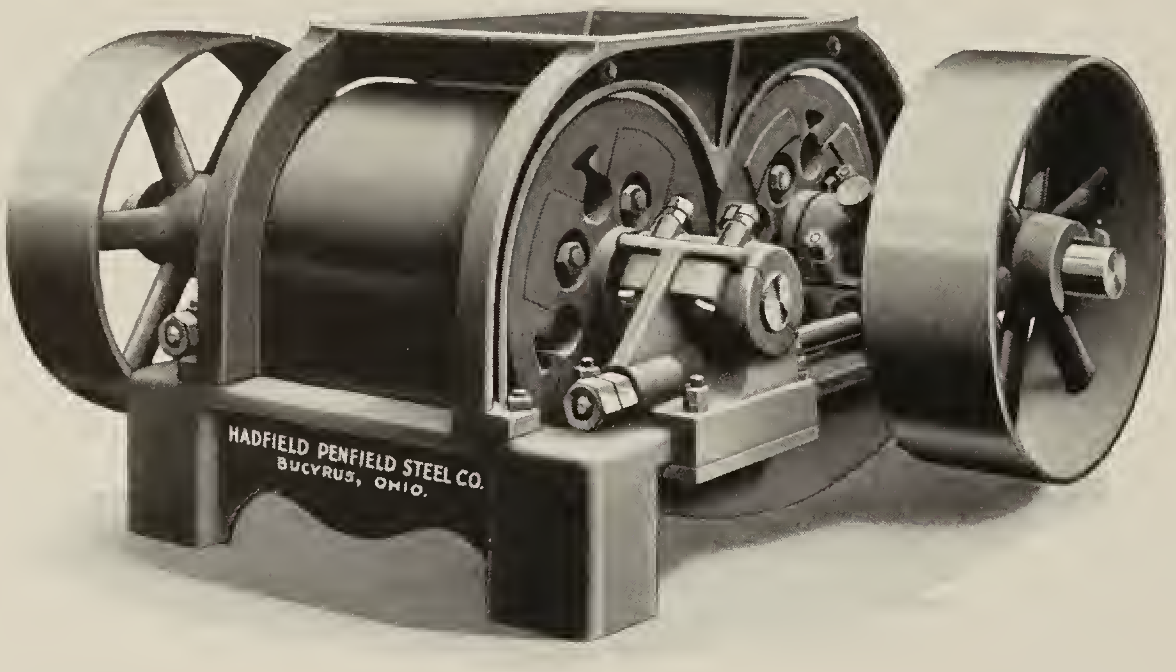
Power required will vary from 20 H.P. to 30 H.P. according to the conditions under which the machine is operating.

DIMENSIONS

Length over all	6′ 1″
Width over all	6′ 7″
Width center to center of pulleys	5′ 1″
Height over all	3′ 2″
Height to center of shafts	1′ 7¼″
Weight	7,500 lbs.

American No. 461 Smooth Roll Crusher

THIS crusher is designed for grinding Plastic clay that carries too much moisture to permit dry grinding and screening. It is built substantially in every detail and is designed for long and hard service as well as for large capacity.



SPECIFICATIONS

Frame

The frame is a heavy one-piece casting machined for the adjustable bearings.

Bearings

The bearings are 9″ long and 3″ in diameter and lined with anti-friction metal. One pair of bearings is cast integral with the frame. The other pair is gibbed to the frame to provide adjustment for the necessary degree of fineness and for taking up wear of rolls. Removable steel shims between the adjustable bearing and bumper keep the rolls at proper distance from each other and 1½″ draw rods through bearings keep the adjustable bearings in position and protect the frame from splitting.

This construction permits the use of springs for taking the load of keeping the rolls together where necessary. It is best to dispense with springs where possible and they are supplied only when ordered as a better grade of work is done without them.

Scrapers

The scrapers may be adjusted from the top of the frame and have renewable wearing parts.

Rolls

The rolls are 20″ in diameter, 18″ face and they are made with a chilled cast iron shell, 2″ thick, mounted on separate heads, keyed to the shaft. The shell for the roll is cast in a chill and is very hard, to resist wear; at the same time it can be re-ground repeatedly and will give good service over a long period of time. As the rolls are short in proportion to their diameter, the wear is more easily distributed over the entire face of the roll, so that repeated regrinding or renewals is obviated. Each roll is driven independently with a belt so that there is no limit to the adjustment for the space between the rolls or in the variation of the speed of the roll.

Heads

The heads are conical in shape and are accurately machined. The end of the shells have pockets filled with soft metal, (Babbitt) this soft metal is cast in the shell over jigs in

American No. 461 Smooth Roll Crusher

such a manner as to make them interchangeable and self-centering insuring accuracy to a high degree and facilitating easy assembly and renewals.

Lugs prevent any slippage between the shell and the heads.

Shafts

The shafts on which the rolls are mounted are 3″ diameter; they are cold rolled steel.

Driving Pulleys

Each roll is fitted with a cast iron driving pulley 24″ x 6″. It is usually customary to drive one roll at 200 R.P.M. and the other at 220 R.P.M. Any variation in the speed of the rolls may be secured if found beneficial for capacity or quality in grinding.

Capacity

Capacity of this machine will vary from 6 to 12 tons per hour depending upon the condition of the material and the degree of fineness to which it must be ground.

Power

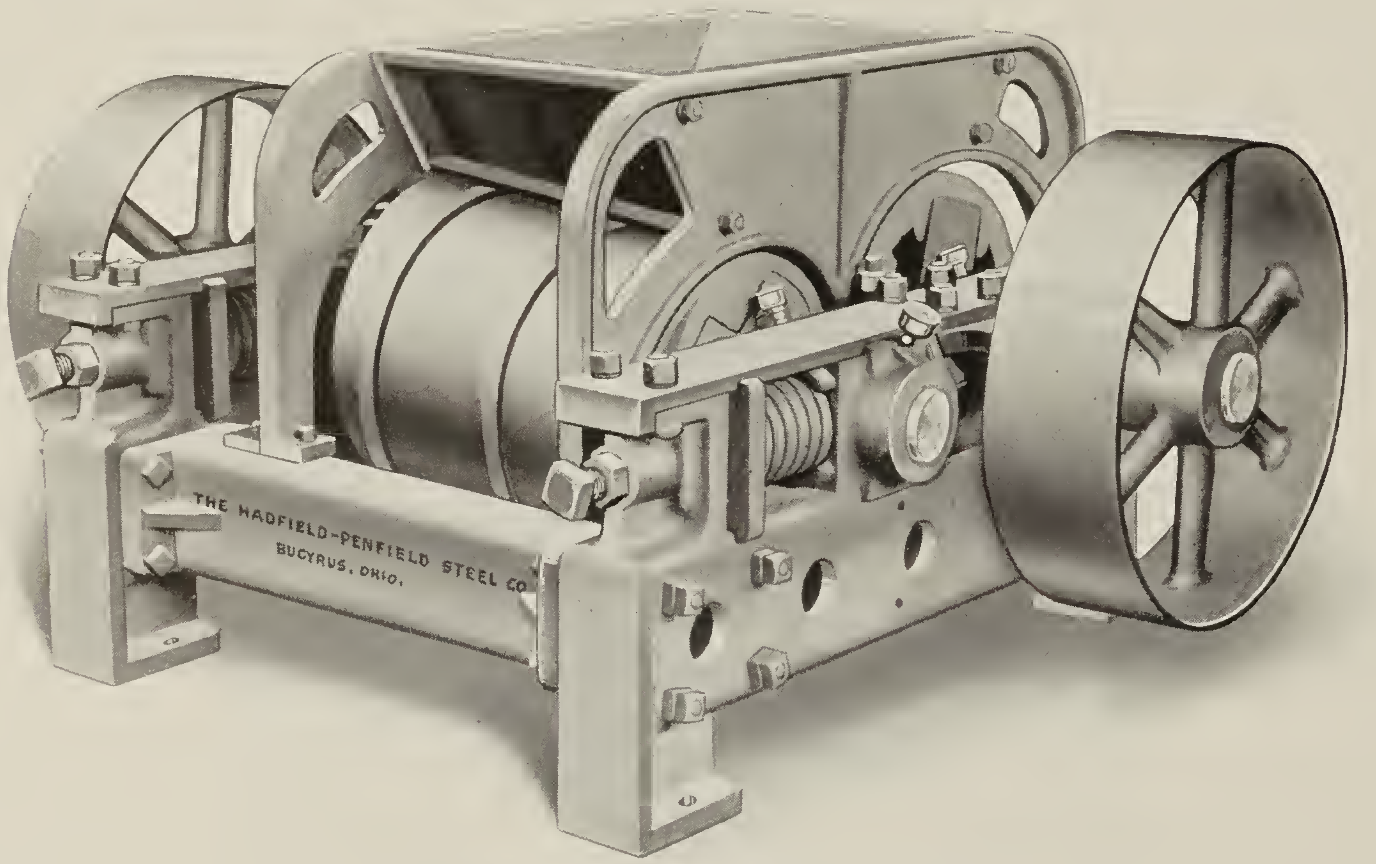
Power required will vary from 10 to 20 H.P. according to the conditions under which the machine is operating.

DIMENSIONS

Length over all	4′ 4″
Width over all	5′ 0″
Width center to center of pulleys	4′ 0″
Height over all	2′ 4½″
Height to center of shafts	1′ 3″
Weight	3,400 lbs.

American No. 464 Stone Separating Crusher

THIS crusher is designed for medium and coarse grinding and for separating the larger stones from plastic clays. Both rolls are conical and one has a thread on its surface, insuring that all stones be discharged to a chute in one end of the frame.



American No. 464 Stone Separating Crusher

SPECIFICATIONS

Frame

The frame is built up from heavy cast iron members accurately machined.

Bearings

The bearings are 11″ long and 4″ in diameter, well babbitted with a good grade of babbitt metal. The bearings for one roll are rigid while for the other roll the bearings are free to slide. These sliding bearings are backed up with heavy springs, taking the strain of keeping the rolls together. The space between the rolls is maintained by means of sheet steel plates or shims between the bearings, held in place by means of a through bolt and serve as a bumper, should the rolls open and permit the passage of a piece of metal. The space between the rolls is regulated by the number of shims placed between bearings.

Scrapers

The scrapers are adjustable from top of frame and have renewable wearing surfaces.

Rolls

The rolls are 22″ in diameter at large end, 16½″ in diameter at small end and 25″ long. The shell is 2¾″ thick, mounted on separate heads, keyed to the shaft. The shell for the roll is cast in a chill and is very hard, to resist wear. At the same time it can be reground repeatedly and will give good service over a long period of time. Each roll is driven independently by means of a belt so that the adjustment of space between rolls or the variations of the speed of the rolls, is not limited as is the case when the rolls are geared together.

American No. 464 Stone Separating Crusher

Heads

The heads are conical in shape and are accurately machined. The end of the shells have pockets filled with soft metal, (Babbitt) this soft metal is cast in the shell over jigs in such a manner as to make them interchangeable and self-centering insuring accuracy and facilitating easy assembly and renewals. Lugs prevent any slippage between the shell and the heads.

Shafts

The shafts on which the rolls are mounted are 4″ diameter; of cold rolled steel.

Driving Pulleys

Each roll shaft is fitted with a cast iron driving pulley 30″ x 8″. It is usually customary to drive one roll at 200 R.P.M. and the other at 250 R.P.M. Any variation in the speed of the rolls may be secured if found beneficial for capacity or quality in grinding.

Capacity

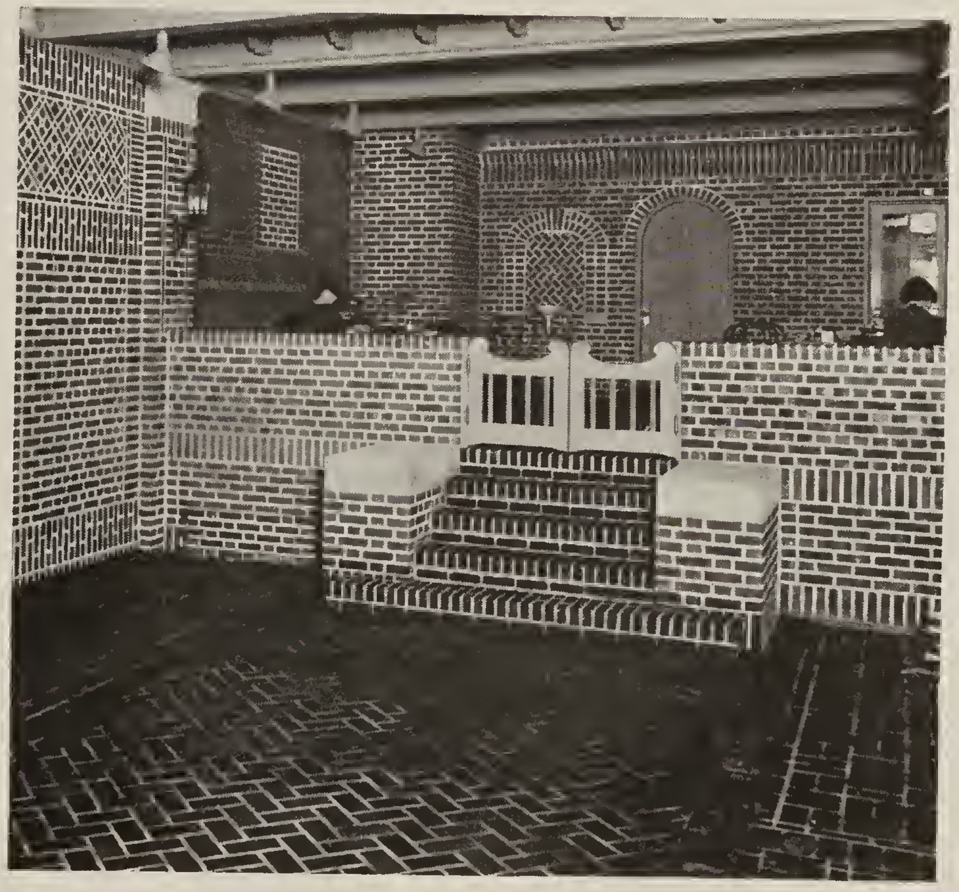
Capacity of this machine will vary from 10 to 20 tons per hour depending upon the condition of the material and the degree of fineness to which it must be ground.

Power

Power required will vary from 20 to 30 H.P., according to the conditions under which the machine is operating.

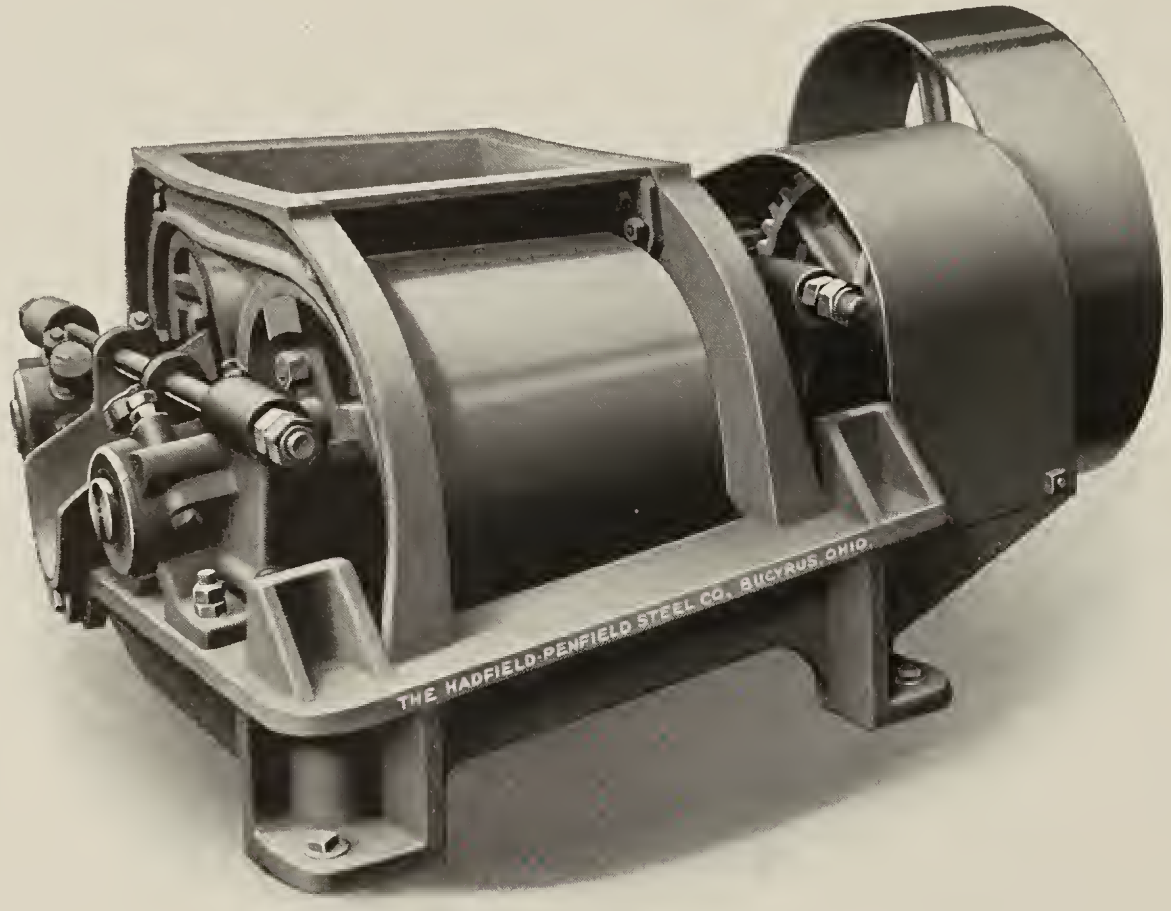
DIMENSIONS

Length over all	5′ 6″
Width over all	6′ 6″
Width center to center of pulleys	5′ 5¾″
Height over all	2′ 11″
Height to center of shafts	1′ 8″
Weight	7,000 lbs.



American No. 462 Conical Smooth Roll Crusher

THIS machine is designed for crushing loamy, plastic clay; separating the larger stones and crushing the smaller ones. It is built substantially in every detail, being designed for long, hard service and the economical replacement of wearing parts.



American No. 462 Conical Smooth Roll Crusher

SPECIFICATIONS

Frame

The frame is a one-piece casting machined accurately for adjustable bearings.

Bearings

The bearings are 10″ long and 4″ in diameter and lined with anti-friction metal. One pair of bearings is cast integral with the frame. The other pair is gibbed to the frame to provide adjustment for the necessary degree of fineness and for taking up wear of rolls. 1½″ draw rods through bearings keep the adjustable bearings in position and take the strain of crushing.

Scrapers

Scrapers for cleaning the rolls are suspended below the frame and are held in contact with the rolls by means of a machine bolt at each end of the rolls. The scrapers are adjusted from the top of the frame and have renewable wearing edges.

Rolls

The rolls are 24″ diameter at large end, 20″ diameter at small end, and 24″ long.

They are "built up," having renewable shells which may be removed for replacement or regrinding.

These shells are chilled and as the chiller in which they are cast is machined, the shells are sufficiently accurate for general use without grinding.

The method of mounting the shells on the heads permits of accurate centering.

American No. 462 Conical Smooth Roll Crusher

Heads

The heads are conical in shape and are accurately machined. The end of the shells have pockets filled with soft metal, (Spelter), this soft metal is cast in the shell over jigs in such a manner as to make them interchangeable and self-centering insuring accuracy to a high degree and facilitating easy assembly and renewals.

Lugs prevent any slippage between the shell and the heads.

Gears

The Gears are conical and are cast from steel. They are 4″ face and are of such diameter as to give a ratio of 2 to 1; that is, one roll makes twice as many revolutions as the other. The pulley is mounted on the faster running roll.

Shafts

The shafts on which the rolls are mounted are 4″ in diameter; they are forged steel turned true to size.

Driving Pulleys

The driving pulley is 40″ x 10″ and should be driven approximately 250 R.P.M.

Capacity

Capacity of this machine will vary from 8 to 12 tons per hour, depending upon the condition of the material and the degree of fineness to which it must be ground.

Power

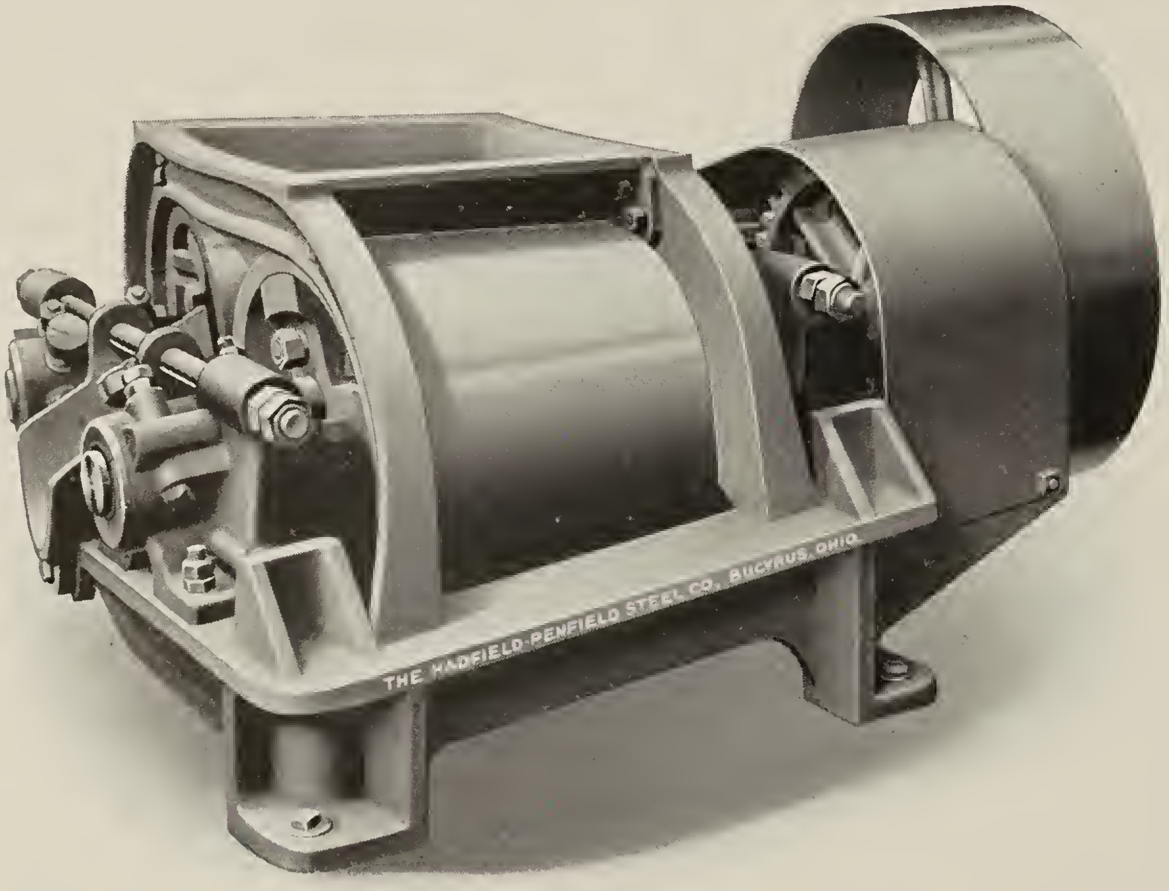
Power required will vary from 20 H.P. to 30 H.P. according to the conditions under which the machine is operating.

DIMENSIONS

Length over all	5′ 5″
Width over all	7′ 5″
Height over all	2′ 10″
Height to center of shafts	15″ and 22⅜″
Weight	6,500 lbs.

American No. 463 Conical Smooth Roll Crusher

THIS machine is designed for crushing loamy, plastic clay; separating the larger stones and crushing the smaller ones. It is built substantially in every detail, being designed for long, hard service and the economical replacement of wearing parts.



American No. 463 Conical Smooth Roll Crusher

SPECIFICATIONS

Frame

The frame is a one-piece casting machined accurately for adjustable bearings.

Bearings

The bearings are 9″ long and 2″ in diameter and lined with anti-friction metal. One pair of bearings is cast integral with the frame. The other pair is gibbed to the frame to provide adjustment for the necessary degree of fineness and for taking up wear of rolls. 1¼″ draw rods through bearings keep the adjustable bearings in position and take the strain of crushing.

Scrapers

Scrapers for cleaning the rolls are suspended below the frame and are held in contact with the rolls by means of a machine bolt at each end of the rolls. The scrapers are adjusted from the top of the frame and have renewable wearing edges.

Rolls

The rolls are 18″ diameter at large end, 15″ diameter at small end, 18″ long.

They are "built up," having renewable shells which may be removed for replacement or regrinding.

These shells are chilled and as the chiller in which they are cast is machined, the shells are sufficiently accurate for general use without grinding.

The methods of mounting the shells of the heads permits of accurate centering.

American No. 463 Conical Smooth Roll Crusher

Heads

The heads are conical in shape and are accurately machined. The end of the shells have pockets filled with soft metal, (Spelter), this soft metal is cast in the shell over jigs in such a manner as to make them interchangeable and self-centering insuring accuracy to a high degree and facilitating easy assembly and renewals.

Lugs prevent any slippage between the shell and the heads.

Gears

The gears are conical and cast from steel. They are 4″ face and are of such diameter as to give a ratio of 2 to 1; that is, one roll makes twice as many revolutions as the other. The pulley is mounted on the faster running roll.

Shafts

The shafts on which the rolls are mounted are 3″ in diameter; they are forged steel turned true to size.

Driving Pulleys

The driving pulley is 30″ x 8″ and should be driven approximately 250 R.P.M.

Capacity

Capacity of this machine will vary from 6 to 8 tons per hour, depending upon the condition of the material and the degree of fineness to which it must be ground.

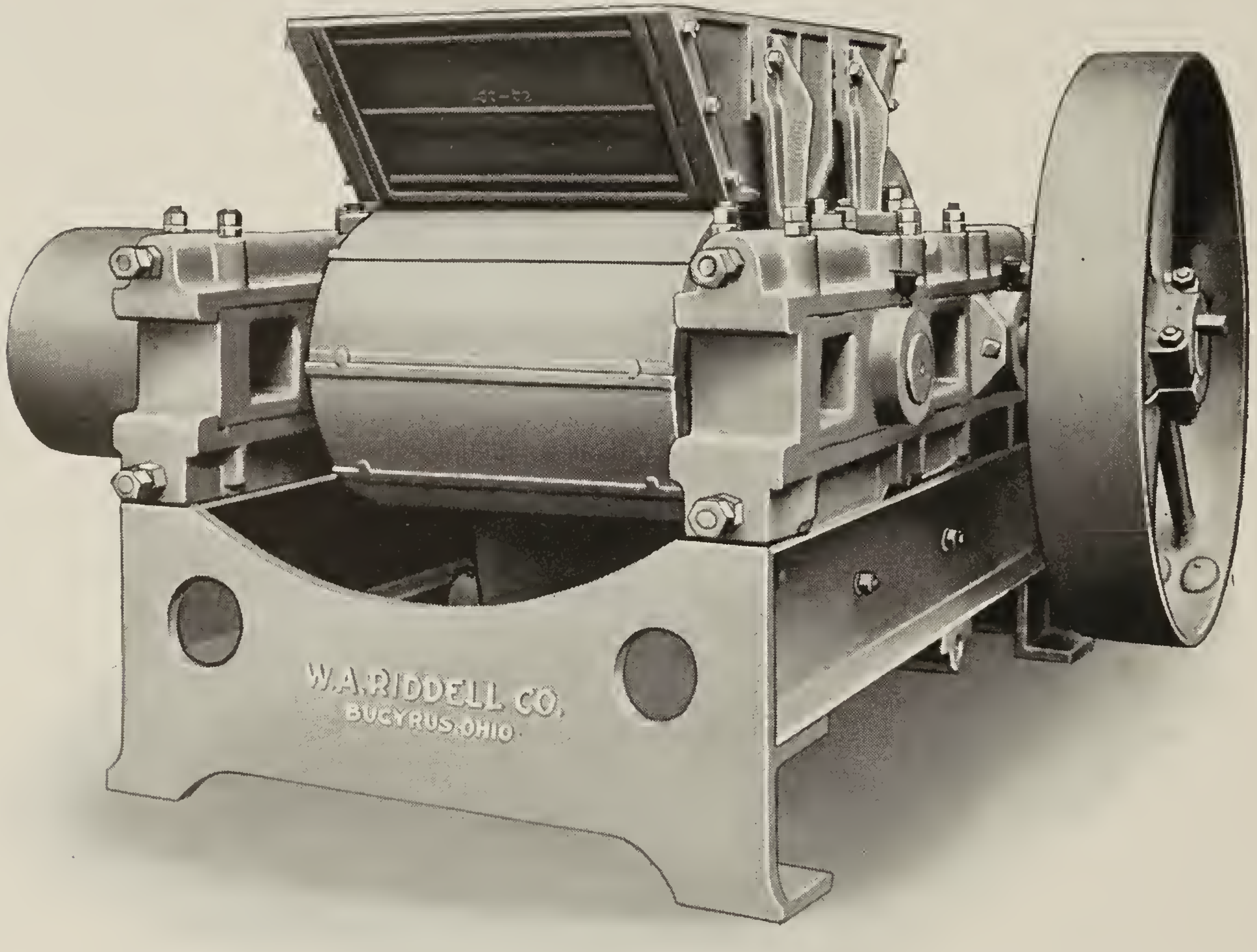
Power

Power required will vary from 15 H.P. to 25 H.P. according to the conditions under which the machine is operating.

DIMENSIONS

Length over all	4′ 5″
Width over all	6′ 3″
Height over all	2′ 2″
Height to center of shafts	12″ and 18″
Weight	3,500 lbs.

Disintegrators



American No. 493 30-inch Disintegrator

DISINTEGRATORS are well adapted to the grinding of plastic or semi-plastic materials rapidly, and wherever fine grinding is not essential. They will crush large lumps that would not go through a smooth roll crusher and throw out stones too large for crushing. They are excellent for preparing lumpy or stony clay for finer grinding.

They may be located above a smooth roll crusher or can be built in a suitable frame with a smooth roll crusher making an effective two stage grinder.

Material may be dumped directly into the hopper but maximum efficiency is obtained by feeding regularly by means of a feeder which may consist of a granulator or similar device. It may also be fed from a Conveyor.

American No. 493 30-inch Disintegrator

THIS disintegrator is designed for grinding plastic clay that carries too much moisture to permit dry grinding and screening. It is built substantially in every detail and is designed for long hard service as well as for large capacity.

SPECIFICATIONS

Frame

The frame is made of two heavy cast iron end pieces with two heavy steel channel bars for each side of the frame on which the castings carrying the bearings are mounted. The frame is securely bolted together so that it is rigid and will not spring.

Bearings

The bearings are 12″ long, 5″ in diameter and babbitted with a good grade of babbitt metal. The bearings on the cutting roll are rigid while on the feed roll the bearings are made to slide. These sliding bearings are backed up with heavy springs and draw bolts 1½″ in diameter. The springs take up the strain of keeping the rolls together and the space between the roll is maintained by means of sheet steel plates or shims between the bearings which are held in place by means of a through bolt and serve as a bumper should the rolls open and permit the passage of a piece of metal or hard material. The space between the roll is regulated by the number of shims between the bearings.

Scrapers

The feed roll is provided with a scraper which is adjustable from the outside so that the arrangement for adjusting is very convenient. The cutting rolls clears itself from material as the speed at which it is driven throws off the material by centrifugal force.

Feed Roll

The feed roll is 36″ in diameter, 30″ face and made with a renewable chilled cast iron shell 3″ thick, mounted on separate heads, keyed to the shaft. The heads are conical in shape and are accurately machined. Ends of the shell have pockets filled with a soft metal (babbitt). This soft metal is cast in the shell on jigs in such a manner as to make them interchangeable and self-centered, insuring accuracy to a high degree and facilitating easy assembly and renewal. Lugs prevent any slippage between the shell and the heads.

Cutting Roll

The cutting roll or high speed roll is 24″ in diameter and 30″ face. This roll has 8 cutting bars made of hard tool steel secured in such a way that they may be adjusted for wear and renewed when worn. Each roll is driven independently with a belt so that there is no limit to the adjustment for the space between the rolls or the variation of the speed of the rolls.

Shafts

The shaft on which the rolls are mounted are 5″ diameter. They are forged steel turned true to size.

Driving Pulley

Each roll is fitted with a cast iron driving pulley. The pulley on the feed roll is 48″ diameter, 8″ face. The speed of this feed roll is 25 to 50 R.P.M. The pulley on the cutting roll is 20″ diameter, 14″ face.

The speed of the cutting roll may be 325 to 475 R. P. M.

Capacity

The capacity of this machine will vary from 30 to 50 tons per hour, depending upon the condition of the material and the manner in which it is fed to the machine.

Power

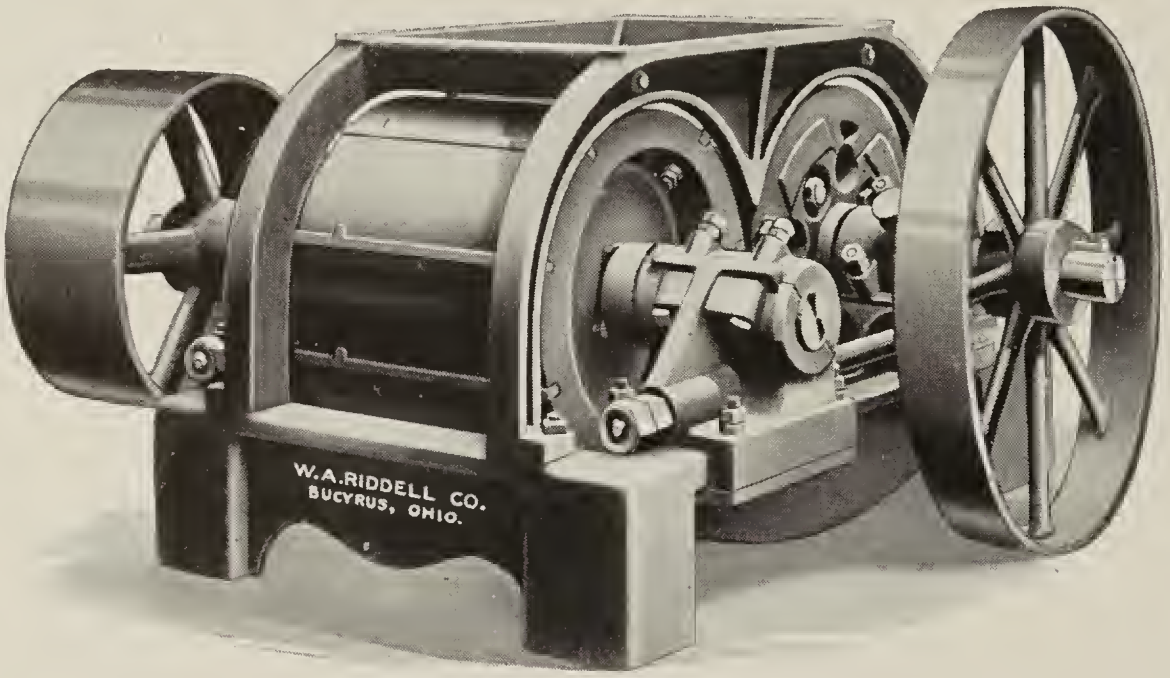
The power required will vary from 40 to 60 H.P., depending upon the conditions under which the machine is operated.

DIMENSIONS

Length over all	8′	2″
Width over all	6′	6″
Width from center to center of pulley	6′	6″
Height over all	5′	
Height to center of shafts	2′	8″
Weight	15,000 lbs.	

American No. 467 24-Inch Disintegrator

THIS machine was designed for grinding plastic clay that carries too much moisture to permit dry grinding and screening. It is built substantially in every detail and is designed for long and hard service. The design of the machine is similar to the No. 460 Smooth Roll Crusher and may readily be arranged for mounting in combination with the No. 460 Crusher for two-stage grinding.



American No. 467 24-Inch Disintegrator

SPECIFICATIONS

Frame

Frame is a heavy one-piece casting properly machined for the bearings.

Bearings

Bearings are 11″ long and 4″ in diameter and lined with anti-friction metal. Bearings for the cutting roll are cast integral with the frame. Bearings for the feed roll are gibbed to the frame to provide adjustment for the necessary degree of fineness and for taking up wear of the roll. Removable steel shims between the adjustable bearings and bumper keep the rolls at proper distance from each other and draw bars 1½″ diameter through the bearings keep the adjustable bearings in position and take the strain of crushing. This construction permits of the use of springs for taking the load of keeping the rolls together where necessary. It has been our experience that it is best to dispense with the springs where possible and they are not supplied unless specially ordered, as a better grade of work is done without them.

Scrapers

The feed roll is provided with a scraper which may be adjusted from the top of the frame and is made readily renewable.

Rolls

The rolls are 28″ diameter, 24″ face. The feed roll is made with renewable chilled cast iron shell 2¼″ thick, mounted on separate heads keyed to the shaft. The heads are conical in shape and accurately machined. The end of the shell has pockets filled with soft metal (babbitt). This soft metal is cast in the shell over jigs in such a manner as to make them interchangeable and self-centering, assuring accuracy to a high degree and facilitating easy assembly and renewable. Lugs preventing slipping between the shell and the heads. The cutting roll is 28″ diameter, 24″ face and is provided with 8 tool steel hardened cutting blades which are adjustable and renewal. Each roll is driven independently with a belt so that there is no limit to the adjustment for space between the rolls or the variation of the speed of the rolls.

Shafts

The shafts on which the rolls are mounted are 4″ diameter forged steel turned true to size.

Driving Pulley

Each roll is fitted with a cast iron driving pulley. The pulley on the feed roll is 40″ diameter, 6″ face and the speed of this roll should be 35 to 50 R.P.M. The pulley on the cutting roll is 24″ diameter, 14″ face and the speed of this roll should be 250 to 400 R.P.M. Any variation in the speed of the rolls may be secured if found beneficial for capacity or quality in grinding.

Power

The power required to operate this crusher will vary from 30 to 50 H.P., according to the conditions under which the machine is operated.

Capacity

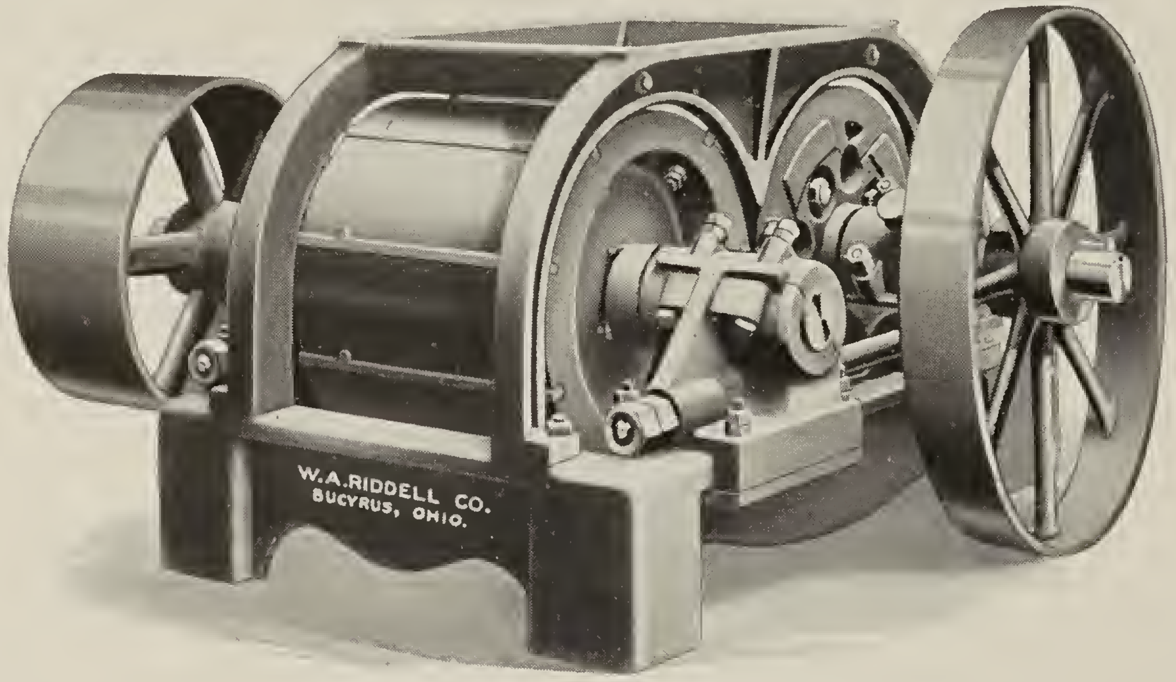
The capacity will vary from 15 to 40 tons per hour, depending upon the condition of the material and the manner in which it is fed to the machine.

DIMENSIONS

Length over all	6′	1″
Width over all	6′	7″
Width center to center of pulleys	5′	1″
Height over all	3′	2″
Height to center of shaft	1′	7″
Weight	7,500 lbs.	

American No. 466 18-inch Disintegrator

THIS machine was designed for grinding plastic clay that carries too much moisture to permit dry grinding and screening. It is built substantially in every detail and is designed for long and hard service. The design of the machine is similar to the No. 461 Smooth Roll Crusher and may readily be arranged for mounting in combination with the No. 461 Crusher for two-stage grinding.



American No. 466 18-Inch Disintegrator

SPECIFICATIONS

Frame

Frame is a heavy one-piece casting properly machined for the bearings.

Bearings

Bearings are 9″ long and 3″ in diameter and lined with anti-friction metal. Bearings for the cutting roll are cast integral with the frame. Bearings for the feed roll are gibbed to the frame to provide adjustment for the necessary degree of fineness and for taking up wear of the roll. Removable steel shims between the adjustable bearings and bumper keep the rolls at proper distance from each other and draw bars 1½″ diameter through the bearings keep the adjustable bearings in position and take the strain of crushing. This construction permits of the use of springs for taking the load of keeping the rolls together where necessary. It has been our experience that it is best to dispense with the springs where possible and they are not supplied unless specially ordered, as a better grade of work is done without them.

Scrapers

The feed roll is provided with a scraper which may be adjusted from the top of the frame and is made readily renewable.

Rolls

The rolls are 20″ diameter, 18″ face. The feed roll is made with renewable chilled cast iron shell 2¼″ thick, mounted on separate heads keyed to the shaft. The heads are conical in shape and accurately machined. The end of the shell has pockets filled with soft metal (babbitt). This soft metal is cast in the shell over jigs in such a manner as to make them interchangeable and self-centering, assuring accuracy to a high degree and facilitating easy assembly and renewable. Lugs preventing slipping between the shell and the heads. The cutting roll is 20″ diameter, 18″ face and is provided with 8 tool steel hardened cutting blades which are adjustable and renewable. Each roll is driven independently with a belt so that there is no limit to the adjustment for space between the rolls or the variation of the speed of the rolls.

Shafts

The shafts on which the rolls are mounted are 3″ diameter forged steel turned true to size.

Driving Pulley

Each roll is fitted with a cast iron driving pulley. The pulley on the feed roll is 30″ diameter, 4″ face and the speed of this roll should be 35 to 50 R.P.M. The pulley on the cutting roll is 20″ diameter, 10″ face and the speed of this roll should be 250 to 400 R.P.M. Any variation in the speed of the rolls may be secured if found beneficial for capacity or quality in grinding.

Power

The power required to operate this crusher will vary from 20 to 35 H.P., according to the conditions under which the machine is operated.

Capacity

The capacity will vary from 10 to 25 tons per hour, depending upon the condition of the material and the manner in which it is fed to the machine.

DIMENSIONS

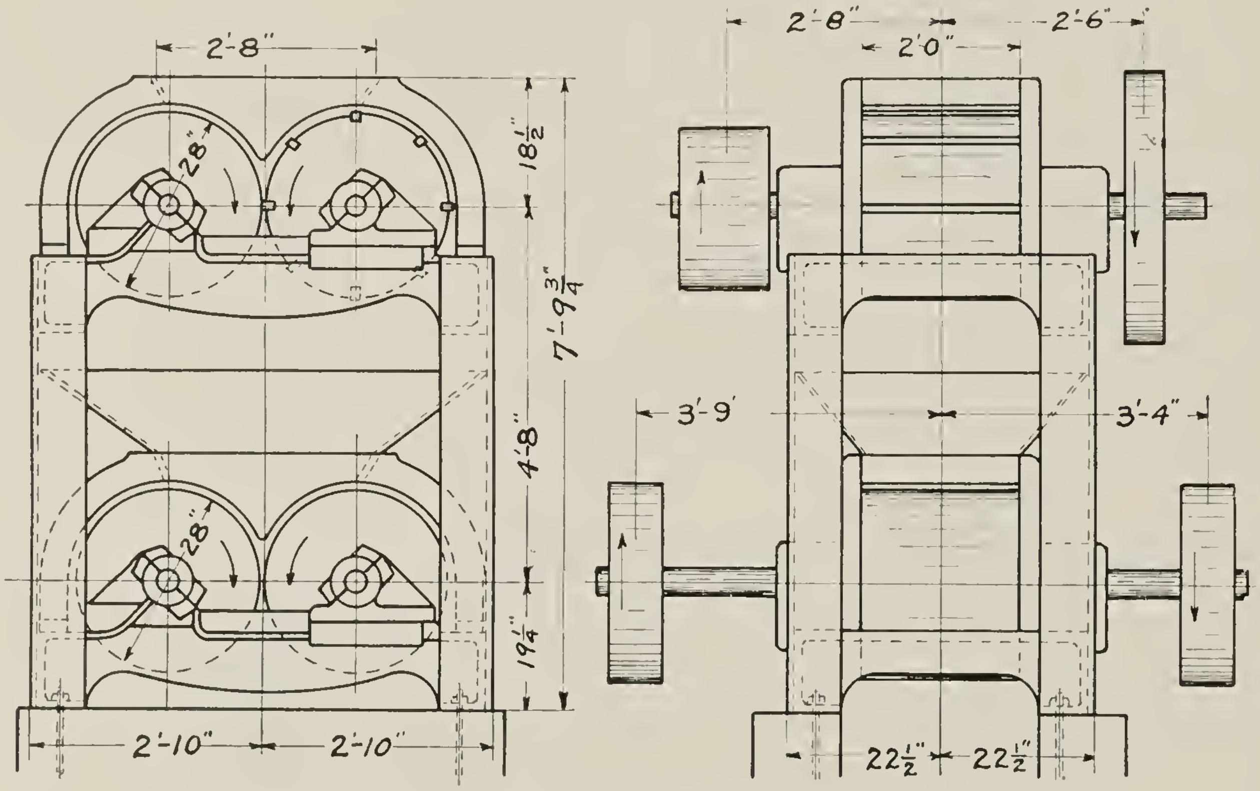
Length over all	4′	4″
Width over all	5′	0″
Width center to center of pulleys	4′	0″
Height over all	2′	5″
Height to center of shaft	1′	3″
Weight	3,600 lbs.	

Two Stage Crushing

FOR crushing lumpy plastic clays it is frequently advisable to do this in two operations using a disintegrator for the coarse and a pair of smooth rolls for the final classification.

The disintegrator will cut up lumps, throw the larger stones and prepare the clay for the smooth rolls.

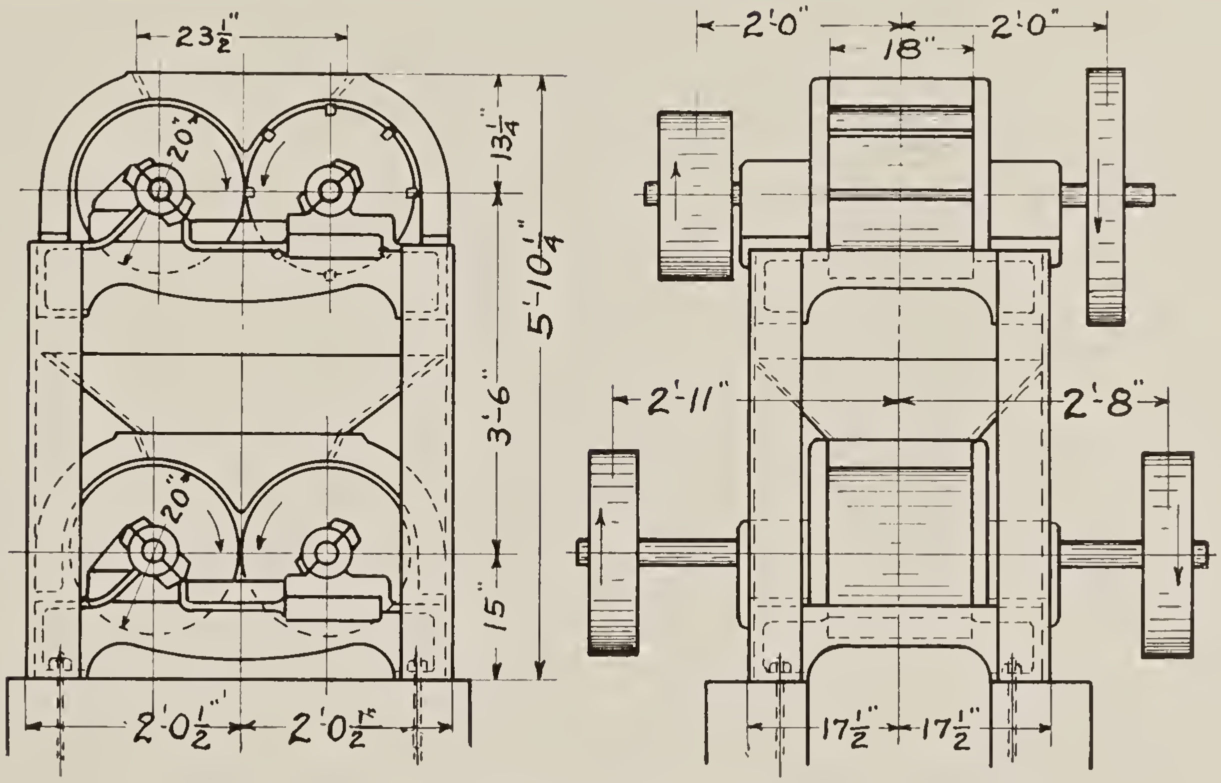
The frame work of our standard disintegrator and crushers was designed with a view towards stacking one above the other using heavy angle corner posts.



American No. 806 Combined 24-inch Disintegrator and Crusher

THIS machine is made up of two machines mounted together designed for two-stage crushing. It consists of one No. 467 Disintegrator mounted above one No. 460 Smooth Roll Crusher. These two machines are fully described in this catalog and when built in combination for two-stage crushing, they are supplied with special length shafts as may be required according to the installation.

American No. 805 Combined 18-inch Disintegrator and Crusher



American No. 805 Combined 18-inch Disintegrator and Crusher

THIS machine is made up of two machines mounted together designed for two-stage crushing. It consists of one No. 466 Disintegrator mounted above one No. 461 Smooth Roll Crusher. These two machines are fully described in this catalog and when built in combination for two-stage crushing, they are supplied with special length shafts as may be required according to the installation.

Brick Laying Schools

BRICK laying schools have been established in many cities and are doing good work. The brick makers are vitally interested in the education of more brick layers and should encourage the movement.

The art of brick laying should be taught in the manual training department of every high school in this country. Money spent in that way would increase the interest in the use of brick.

One out of every ten boys in the high schools should become a practical brick layer. It is good, healthy and profitable work.

WARCO
BUCYRUS
OHIO

Winding Drum and Clay Car Department

American No. 394 and No. 393 Winding Drum

THIS machine is used to draw cars loaded with clay from the clay pit into the building. Machine is self-contained, being mounted on a substantial cast iron base and well built in every detail. The drum is 16″ diameter and runs loose on the shaft on bronze bushed bearings. By means of a lever and screw the drum is forced against a cone wood friction which is securely bolted to the large spur gear.

An independent lever is provided to operate the friction band brake used to hold the car or slack it back down the incline track.

This machine, when built for a bevel gear drive, is known as the American No. 393 Winding Drum.

On a 10 per cent grade, this drum will hoist 35,000 lbs.; on a 20 per cent grade it will hoist 18,000 lbs.; and on a 30 per cent grade, it will hoist 12,000 lbs.

The drum will hold 1,500 feet of ⅝″ cable.

SPECIFICATIONS

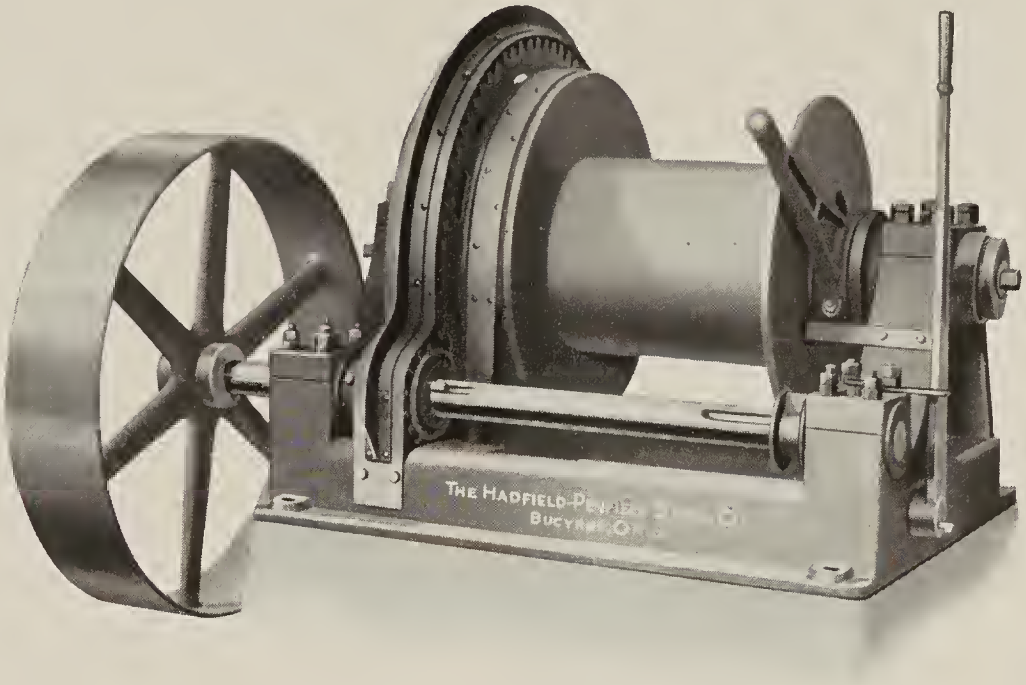
Diameter of drum	16″
Length of drum	20″
Height of flanges	5″
Diameter of drum shaft	4⅛″
Diameter of driving shaft	2¾″
Length of bearings	6″
Diameter of master gear	35″
Diameter of pinion	7″
Face of gears	4¼″
Pitch of gears	2″
Ratio of gears	5 to 1
Capacity of drum ⅝″ cable	1,500′
Average cable speed per minute	210′
Driving pulley	40 x 8″
Speed of driving pulley	150 to 200 R.P.M.
Power	15 to 30 H.P.
Weight	3,500 lbs.

DIMENSIONS No. 394 DRUM

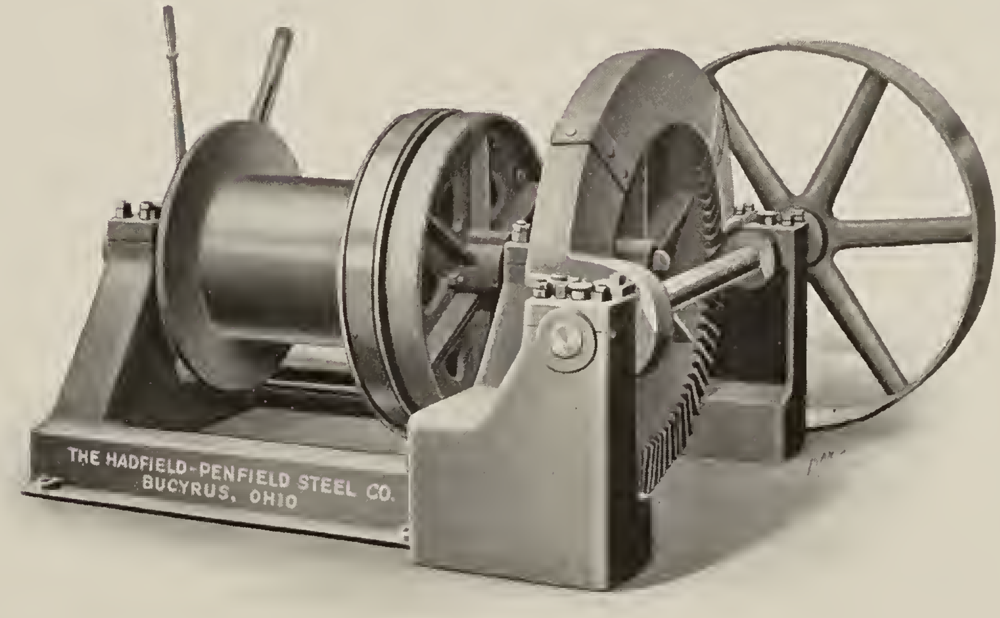
Length over all	5′	6″
Width over all	4′	11″
Height over all	3′	5″
Height from floor to center of drum shaft		21″
Height from floor to center of driving shaft		10″
Distance from center of drum to center of driving shaft		18″
Distance from center of drum to end of driving shaft	3′	3″

DIMENSIONS No. 393 BEVEL-GEARED DRUM

Length over all	5′	6″
Width over all	5′	5″
Height over all	3′	5″
Height from floor to center of driving shaft and drum shaft		21″
Distance from center of drum shaft to center of driving shaft	2′	7″
Distance from center of drum shaft to end of driving shaft	3′	2″



American No. 394 Winding Drum



American No. 393 Bevel-Gear Winding Drum

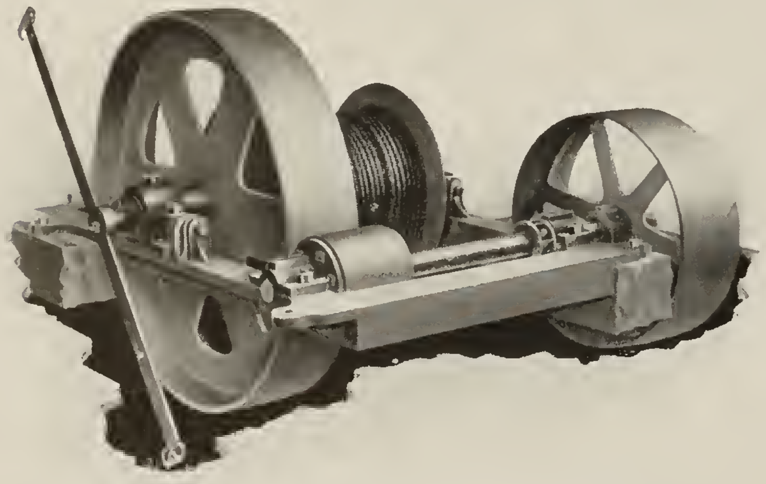
American No. 1 Friction Winding Drum

THIS machine is self-contained, being mounted on a heavy cast iron base. The drum shaft is provided with a large friction wheel and the driving shaft is provided with a paper friction pulley. The shifting lever is placed on the end of the drum shaft on the side next to the friction wheel. The bearing on this side of the frame is made with an eccentric in the box so that a slight movement of the lever will move the drum shaft, bringing the large friction wheel in contact with the paper friction pulley. On the opposite side of the large friction wheel is the brake shoe against which the wheel is forced when it is necessary to use the brake. The drum is so arranged that the shifting lever can be operated, if necessary, from a distance. It is therefore not absolutely necessary for the operator to be stationed at the winding drum if it is more desirable to have him stationed at some distant point.

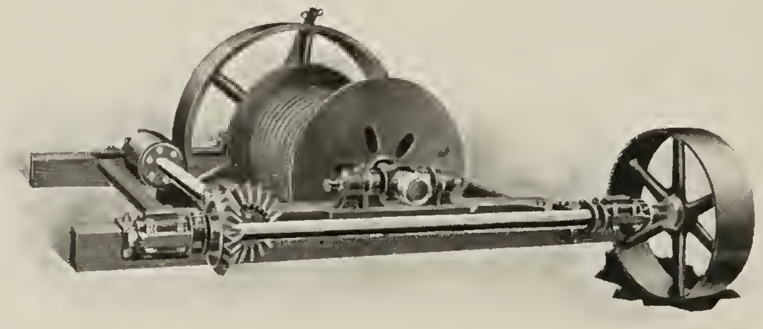
The construction of the machine throughout is strictly first class. Each and every machine is erected complete and carefully inspected in our factory before shipment.

The No. 1 winding drum is also built to drive with miter gears when required.

Hoisting capacity on a 10 per cent grade, 12,000 pounds, on a 20 per cent grade 6,400 pounds, and on a 30 per cent grade 4,500 pounds.



American No. 1 Friction Winding Drum



American No. 1 Miter-Geared Friction Winding Drum

SPECIFICATIONS

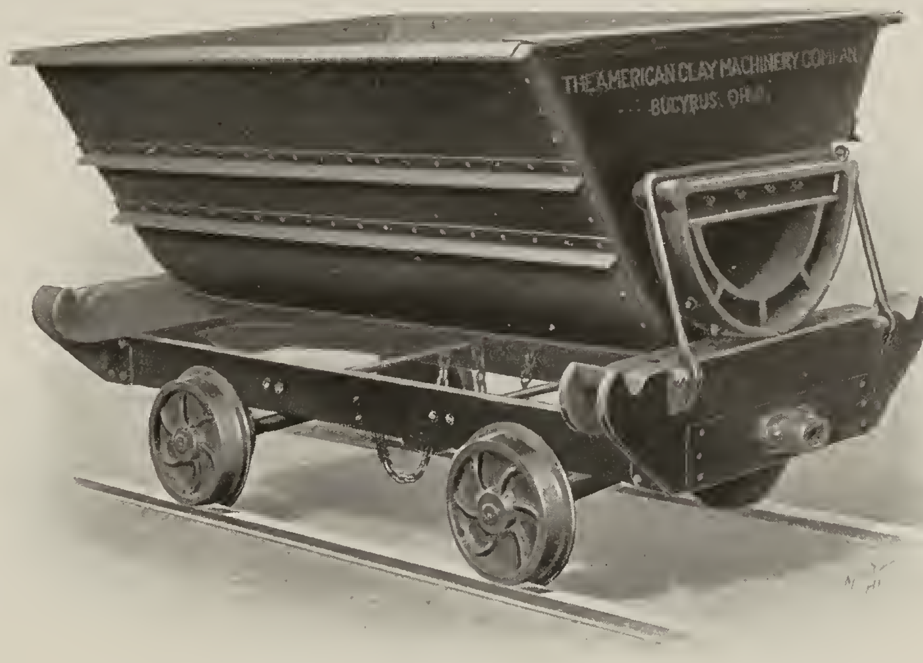
Diameter of drum	12″
Length of drum	17″
Diameter of drum shaft	2½″
Diameter of driving shaft	2″
Length of bearings on drum shaft	4″
Length of bearings on driving shaft	4″
Diameter of friction wheel	40″
Face of friction wheel	7½″
Diameter of paper friction pulley	8″
Ratio of friction wheels	5 to 1
Capacity of drum ⅝″ cable	675′
Average cable speed per minute	125′
Driving pulley	24″ x 6″
Speed of driving pulley	150 R.P.M.
Power	5 H.P.
Weight	1,435 lbs.

DIMENSIONS

Length over all	6′	
Width over all	4′	4″
Height over all	4′	5″
Height from floor to center of driving shaft	2′	
Height from floor to center of drum shafts	2′	2″
Distance from center of drum to center of driving pulley	1′	10½″
Distance from center of drum to end of driving shaft	2′	2″
Miter gears	1½″ pitch, 3½″ face, 11½″ dia.	

Standard American Clay Cars

WE build a complete line of standard Clay Cars which are substantially designed and built of excellent material. These cars are of the side dumping and bottom dumping variety and include both steel and wood construction. We feel that in submitting this line of cars to the Clay Trade we have anticipated every requirement with a car that will exactly meet the needs and built for the service required.



American No. 74 Side Dump Clay Car. Capacity 1 yd. Weight 1500 pounds

SPECIFICATIONS

Frame

The body of the car is made of steel plates reinforced with heavy angles. The frame is made of flat steel bars securely riveted at corners and thoroughly braced.

Dumping Device

When loaded the car is held in an upright position by a lock bar which is hinged to the rocker track. This bar is held to the top of the rocker by a removable pin. By pulling the pin the lock bar can be swung back from the rocker track allowing the car to be dumped. Strong chains are provided to prevent the car rocking too far when being dumped.

Bearings

The bearings are babbitted with a superior grade of metal for the service required.

Wheels

The heavy chilled wheels are bored true and are pressed on to the axle.

Axles

The axles are made of cold rolled steel, turned true in the bearings.

Brakes

These cars are built with and without brakes. For information as to which have brakes see specification table. Brakes are on two wheels.

Couplers

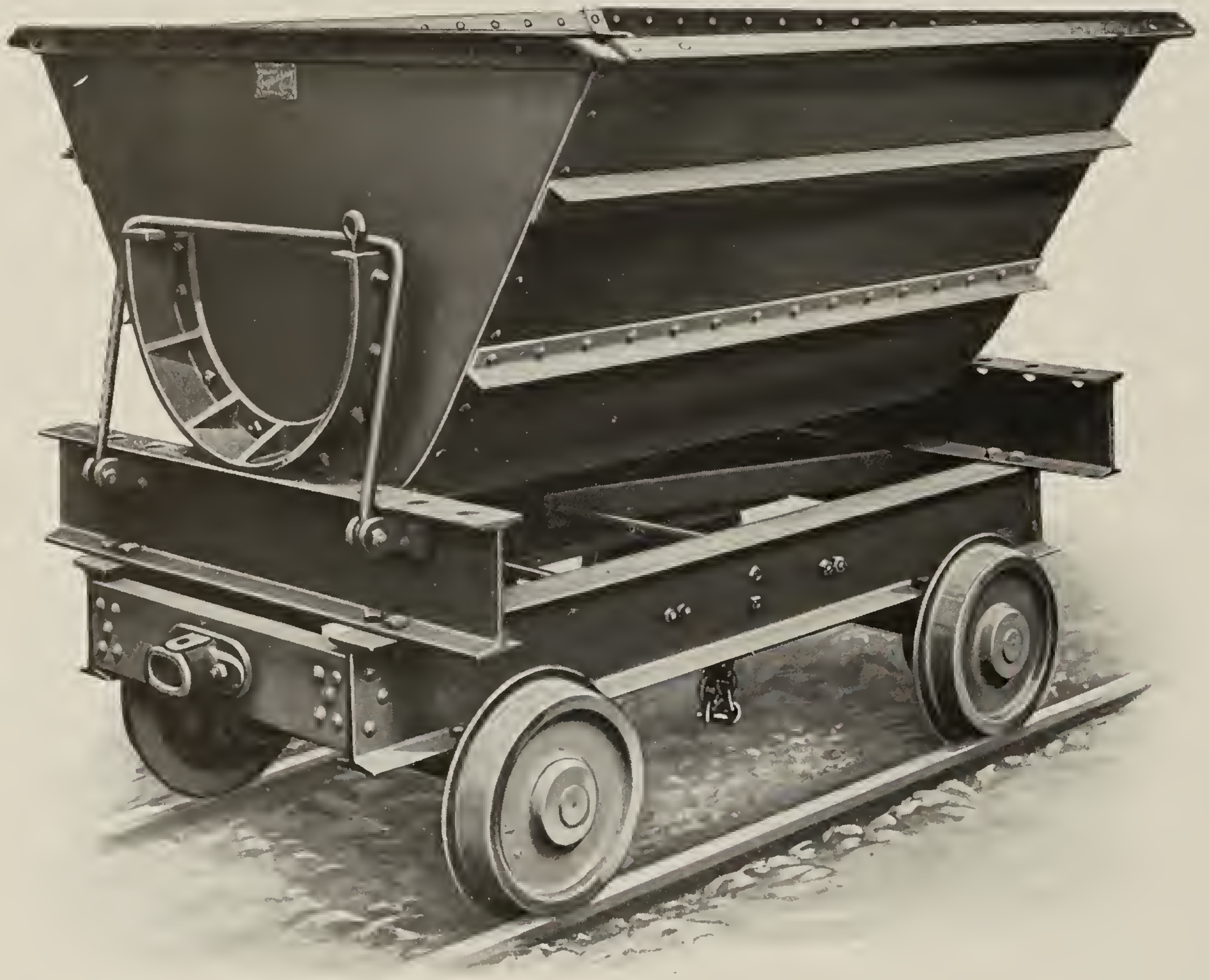
A coupling device is supplied at each end of the car. The bolts pass through the angle braces so that the strain of pulling the load is not applied to the end piece alone.

DIMENSIONS—No. 74 CLAY CAR

Capacity, cubic yards		1
Length	6′	4″
Width	4′	10″
Height	3′	9″
Wheel base	3′	6″
Diameter axle		2″
Diameter of chilled wheels		14″
Gauge of track		30″
Frame—flat bars	6 x	3/8″
Thickness of hopper plate		3/16″
Weight		1,500 lbs.

American No. 171 and No. 200 Steel Side Dump Clay Cars

THESE cars are designed for heavy work such as they would be subjected to in receiving shale direct from large capacity steam shovels. The frame is made of 8″ steel "I" beams well riveted and braced. The body is made of $\frac{3}{16}$″ steel plate reinforced and 2″ x 2″ x ¼″ angles.



American No. 171 Side Dump Clay Car. Capacity 1½ yds. Weight 2325 pounds
American No. 200 Side Dump Clay Car. Capacity 2 yds. Weight 2156 pounds

DIMENSIONS—CAR No. 171

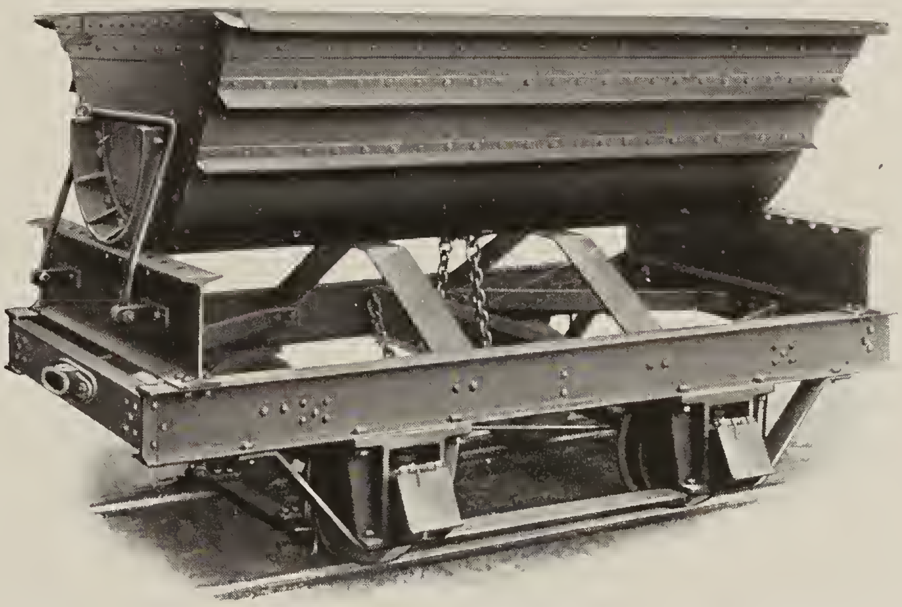
Capacity cubic yards	1½
Length over all without brake	7′
Length over all with brake	8′ 10″
Width	5′ 5″
Height	4′ 8″
Wheel base	4′
Diameter of axle	2½″
Diameter of chilled wheels	14″
Track gauge	36″
Weight without brake	1,993 lbs.
Weight with brake	2,156 lbs.

DIMENSIONS—CAR No. 200

Capacity cubic yards	2
Length over all without brake	8′ 2″
Length over all with brake	9′ 11″
Width	5′ 5″
Height	4′ 8″
Wheel base	4′
Diameter of axle	2½″
Diameter of chilled wheels	14″
Track gauge	36″
Weight without brake	2,110 lbs.
Weight with brake	2,325 lbs.

American No. 197 and No. 212 Steel Side Dump Clay Cars

THESE cars are substantially constructed of steel and iron and are especially designed for use in connection with a steam shovel. They are built to withstand the shock of steam shovel loading and the stress of handling in a train.



American No. 212 Side Dump Clay Car. Capacity 2½ yds. Weight 4322 pounds

Frame and Body

The frame is 8″ steel "I" beams securely riveted and braced. The body is made of ¼″ steel plates reinforced by 2½″ x 2½″ x ¼″ angles.

Bearings

The bearings are made according to Master Car Builders specifications and are furnished with brasses and reservoirs for oiled waste underneath the axles. The bearings are covered with suitable hinged caps for the exclusion of dirt. The pedestal bearings are well braced to withstand the shocks of coupling. Suitable bumpers are also provided. The journals are provided with springs for taking up shocks while loading.

DIMENSIONS—CAR No. 197

Capacity cubic yards	2½
Length over all	12′ 1½″
Width	5′ 9″
Height	5′ 5½″
Wheel base	48″
Diameter of axle	3¼″
Diameter chilled wheels	17″
Gauge of track	36″
Weight	4,717 lbs.

No. 197 car is equipped with a substantial brake.

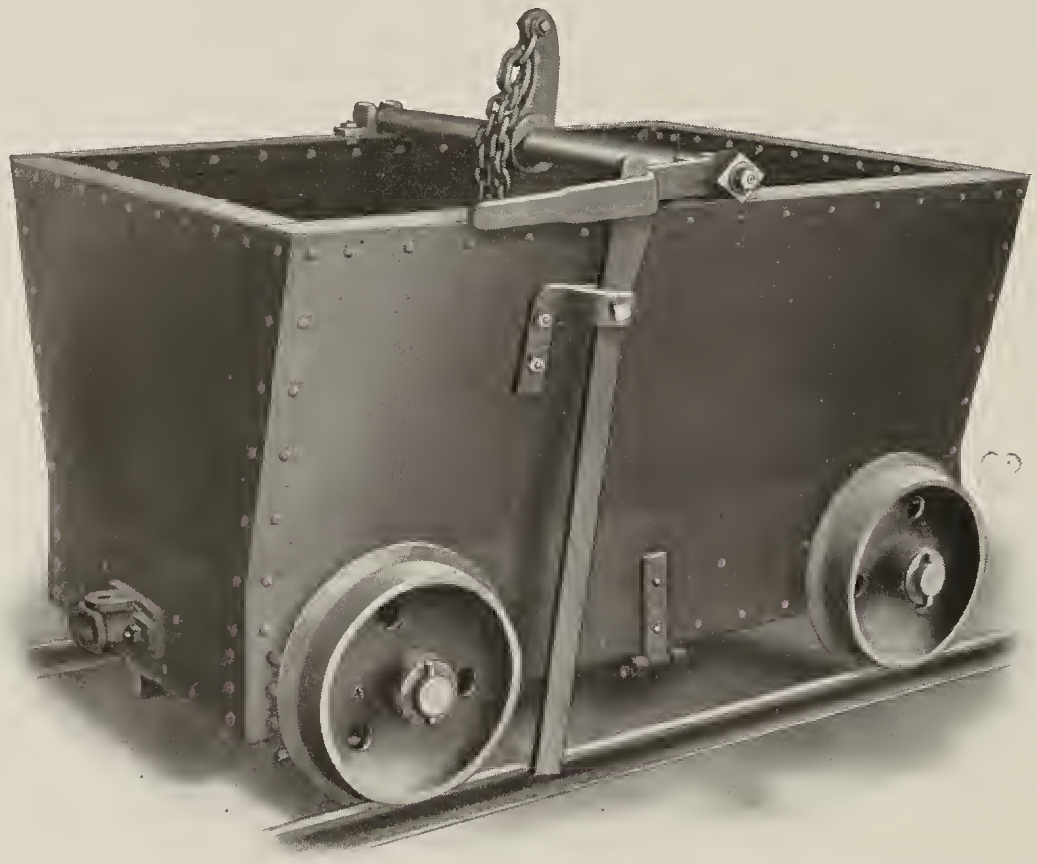
DIMENSIONS—CAR No. 212

Capacity cubic yards	2½
Length over all	9′ 11″
Width	5′ 9″
Height	5′ 5½″
Wheel base	48″
Diameter of axle	3¼″
Diameter chilled wheels	17″
Gauge of track	36″
Weight	4,322 lbs.

No. 212 car is not equipped with brake.

American No. 71 Steel Bottom Dump Clay Car

THIS is a well built car constructed throughout of iron and steel. It is substantially braced and bolted and will be found satisfactory in all respects.



American No. 71 Bottom Dump Clay Car. Capacity 1½ yds. Weight 1430 pounds

SPECIFICATIONS

Dumping Device

The car is fitted with an automatic dumping device so arranged that by placing a trip alongside the track the latch, holding the double doors which form the bottom of the car, is released, and the doors swing open.

Frame and Body

The main body of the car is made of sheet steel plates ¼″ thick and thoroughly reinforced by 2″ x 2″ x ¼″ steel angles and supported on a frame made up of 6⅜″ steel bars.

DIMENSIONS

Capacity cubic yards		1½
Length	5′	10″
Width	3′	11″
Height, top of rail to top of bed	2′	11″
Height over all	3′	10″
Wheel base	3′	6″
Diameter of axle		2⅜″
Diameter of wheels		14″
Gauge of track		36″
Weight		1,430 lbs.

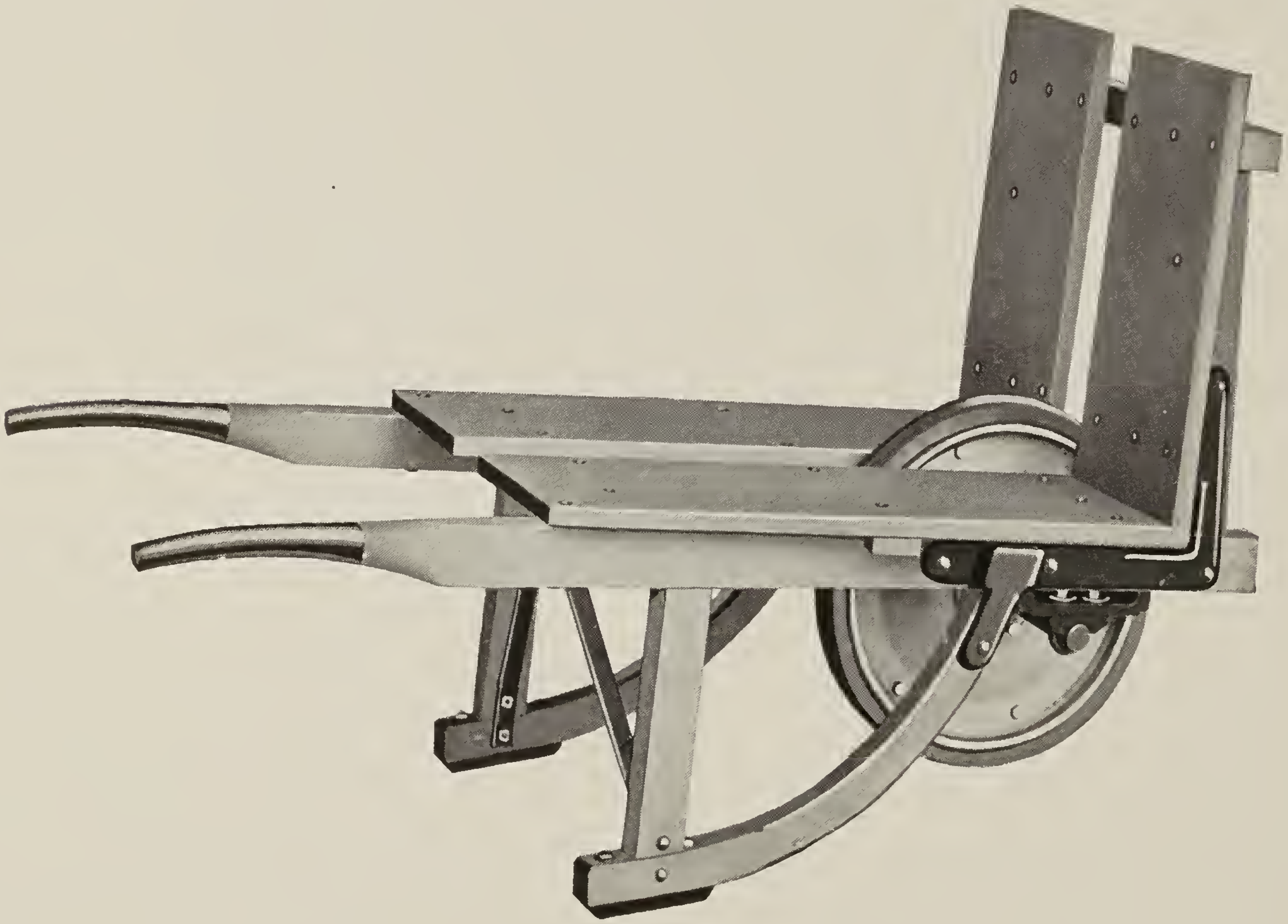
WARCO
BUCYRUS
OHIO

Barrows and Truck Department

American Line of Barrows and Trucks

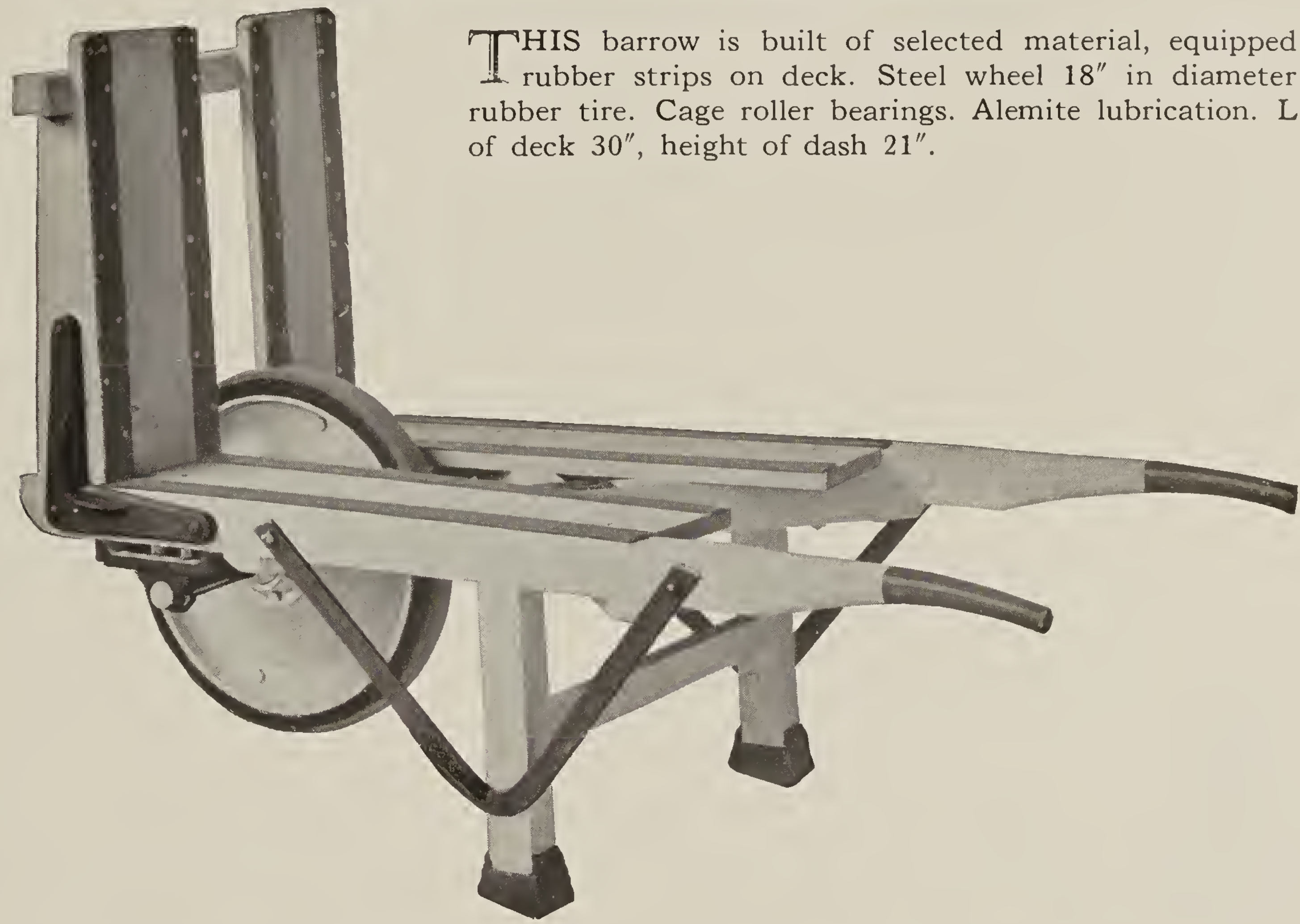
American No. 727-A Brick Barrow

THIS barrow is designed for handling burned brick from kiln to cars or to storage yard. It can also be used for tile. The design is modern, keeping hard service in mind. It is built of selected material and thoroughly braced for severe service. Equipped with steel wheel and rubber tire. Cage roller bearings. Alemite lubrication. Length of deck 31″, height of dash 21″.



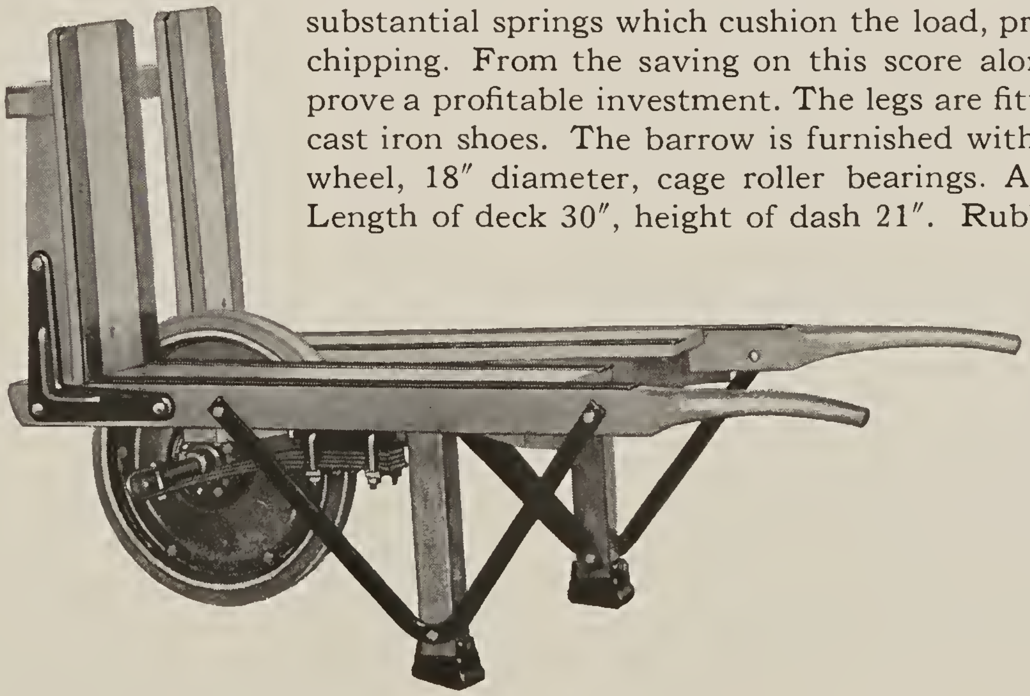
American No. 733-A Brick Barrow

THIS barrow is built of selected material, equipped with rubber strips on deck. Steel wheel 18″ in diameter with rubber tire. Cage roller bearings. Alemite lubrication. Length of deck 30″, height of dash 21″.



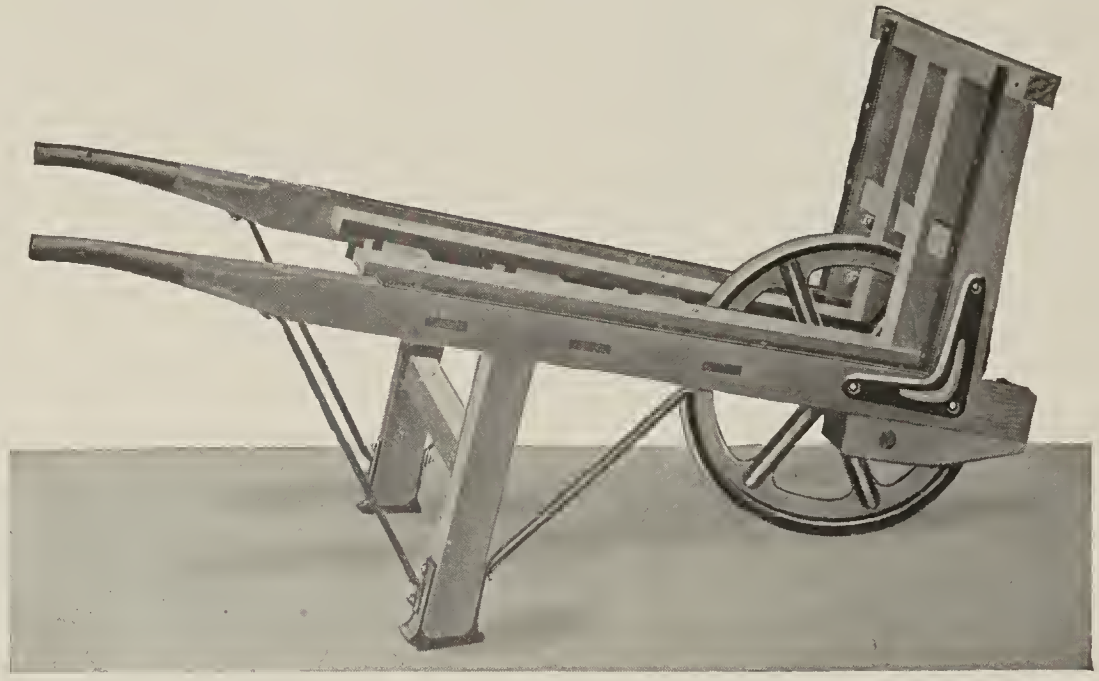
American No. 4-A Spring Barrow for Pressed Brick

THIS barrow is designed for the careful handling of pressed brick either dry or burned. It is a strong, durable barrow made of the best seasoned material securely ironed and braced. It is equipped with substantial springs which cushion the load, preventing loss from chipping. From the saving on this score alone the barrow will prove a profitable investment. The legs are fitted with renewable cast iron shoes. The barrow is furnished with rubber tired steel wheel, 18″ diameter, cage roller bearings. Alemite lubrication. Length of deck 30″, height of dash 21″. Rubber strips on deck.



American No. 735-A Barrow

THIS is a strong, substantial barrow, built for handling burned brick. It is well braced and designed for severe service. Cast iron wheel 20″ diameter, length of deck 32″, height of dash 18″.

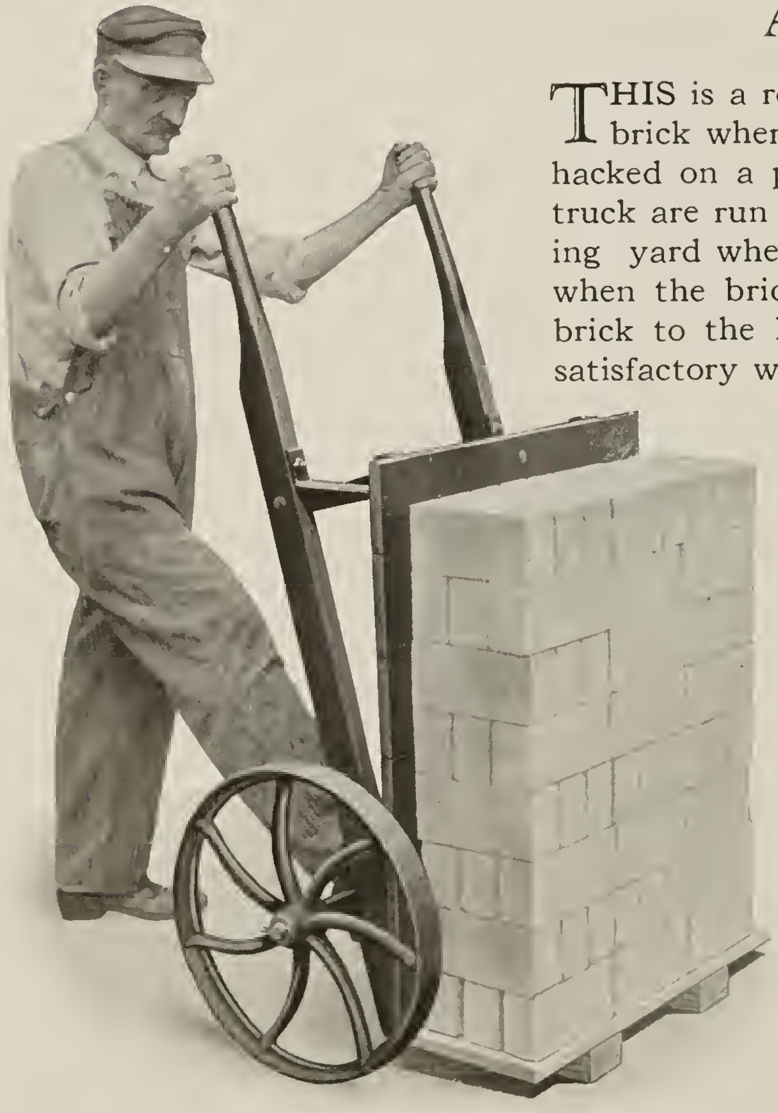


American No. 117-A Truck

THIS is a roller bearing truck and is used in making stiff mud brick where the brick are dried in the open. The 72 brick are hacked on a pallet at the machine and then the prongs of the truck are run under the pallet and the load conveyed to the drying yard where the brick are dried in the unit formation. Later, when the brick are dry, the truck is again used to convey the brick to the kiln. The truck is well made and is proving very satisfactory wherever used.

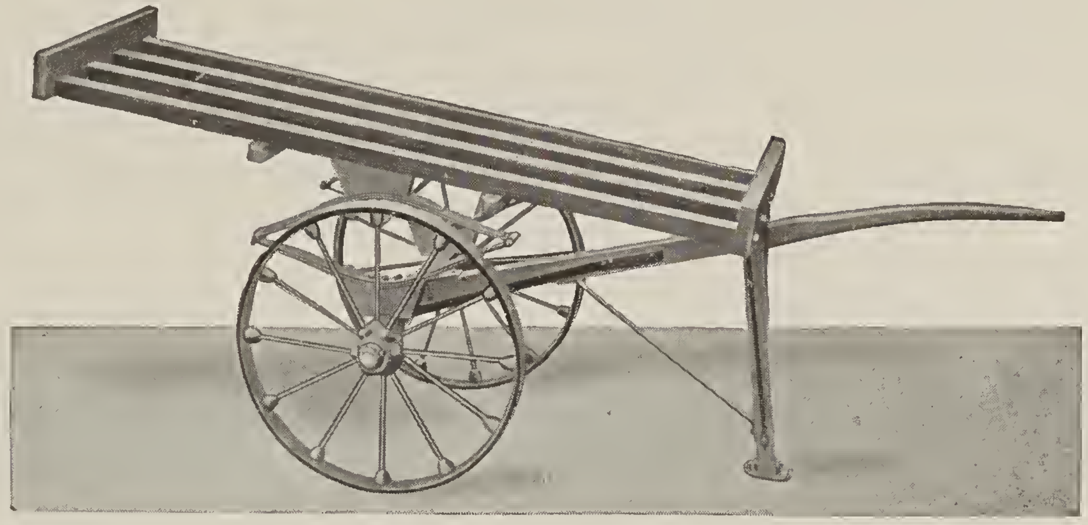
SPECIFICATIONS

Size of wheel	19¼″ x 2″
Size of axle	1¼″ sq. turned to 15/16″ for wheel
Width center to center of wheels	2′ 9½″
Width over all	3′ 2⅛″
Back board	2′ 6″ x 2′ 10″
Width between forks	20″
Forks project from backboard	9½″
Height over all	4′ 9″
Wheels roller bearing	1″ dia. 3″ long
Standard size pallet	10″ x 30″



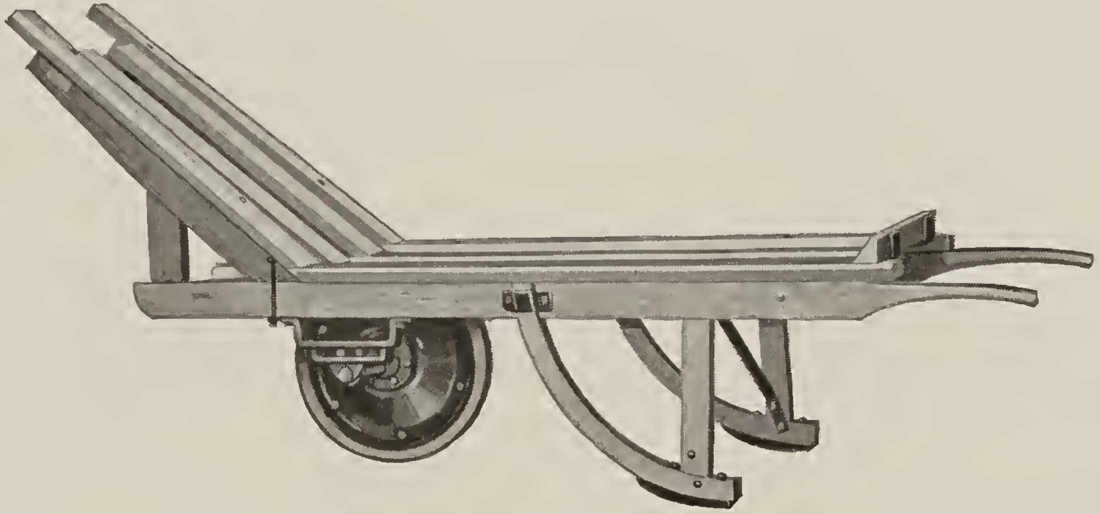
American No. 739-A Dry Press Truck

THIS truck is built for handling dry press brick, from the machine to the kiln. Substantially built of selected material and provided with springs of ample capacity to carry the load. Length of deck 70″, width 24″. Steel wheels 28″ diameter, 2″ face.



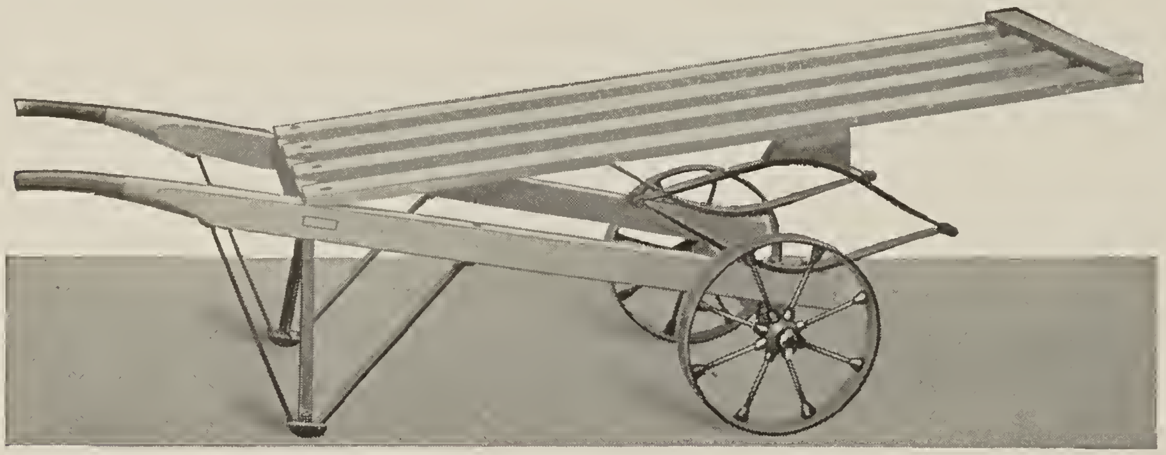
American No. 730-A Barrow

THIS barrow is designed for handling drain tile, sewer pipe and hollow block. Substantially built of selected material. Length of deck 48″, length of dash 36″. Steel wheel 18″ diameter with rubber tire. Alemite lubrication.



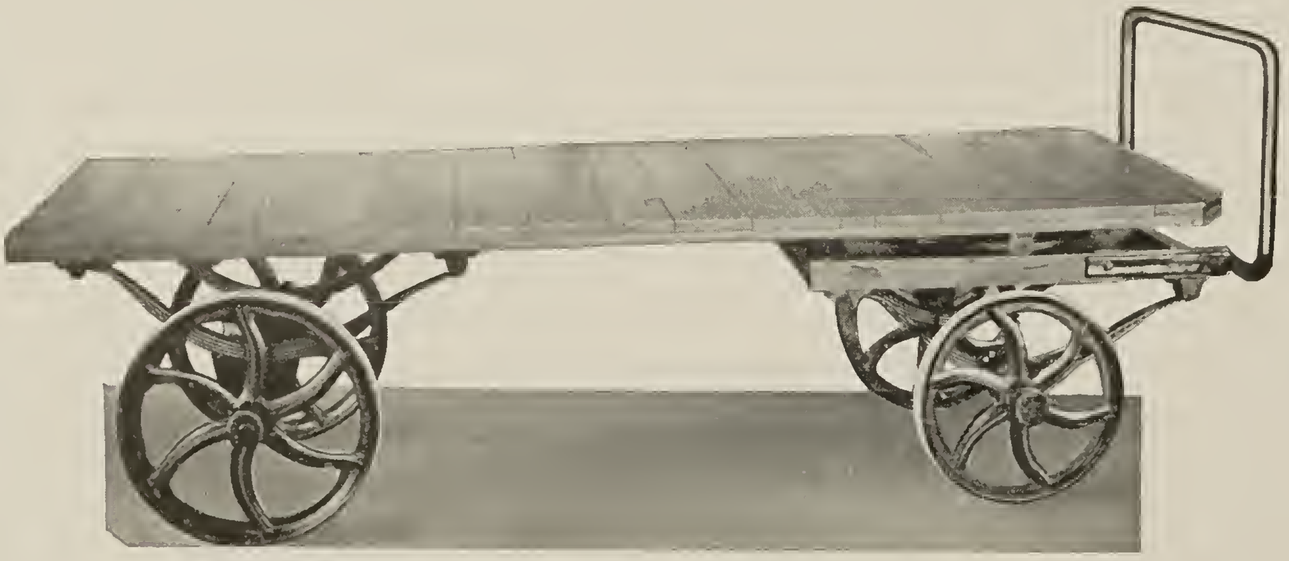
American No. 737-A Slatted Deck Truck

THIS truck is designed for handling pallets or molds loaded with brick. Can also be used for sorting brick and can be used with a solid top if specified. Built of selected material. The deck is 5′ 4″ long, 24″ wide. Equipped with substantial springs. Wheels 15″ diameter, 2″ face.



American No. 700-A Four-Wheeled Tile Wagon

PLATFORM is 8′ long, 38″ wide, 26″ above the floor. Rear wheels 20″ diameter, front wheels 18″ in diameter. Roller bearings. A very convenient and handy wagon for any plant.



WARCO
BUCYRUS
OHIO

Dry Press Brick Machinery Department

Dry Press Brick Machinery

IN the manufacture of high-grade dry press brick nothing is more essential to success than the proper preparation of the clay. It should be carefully and thoroughly ground, pulverized and screened to the consistency of flour and should be delivered to the press in practically a dry condition, only a small amount of moisture being incorporated with it.

The prepared clay is deposited in bins directly over a revolving press feeder or over the hopper of the press, the press feeder or bin being connected with the press hopper by two flexible canvas tubes. At each revolution of the machine the automatic charger moves forward, fills the molds and withdraws. The top and bottom plungers then move toward each other in the mold, subjecting the material between them to an enormous pressure from both top and bottom. This double pressure insures a dense, compact brick, containing the greatest possible amount of material, and does away with soft centers and stratified texture when burned. Each brick comes from the press with sharp, well defined corners, perfect angles and highly polished sides. The brick are raised in the molds under pressure and are ejected by the lower plunger. The forward movement of the charger pushes the brick upon the table, from which they are removed by the attendant to the trucks, barrows or dry cars, and the operation is repeated.

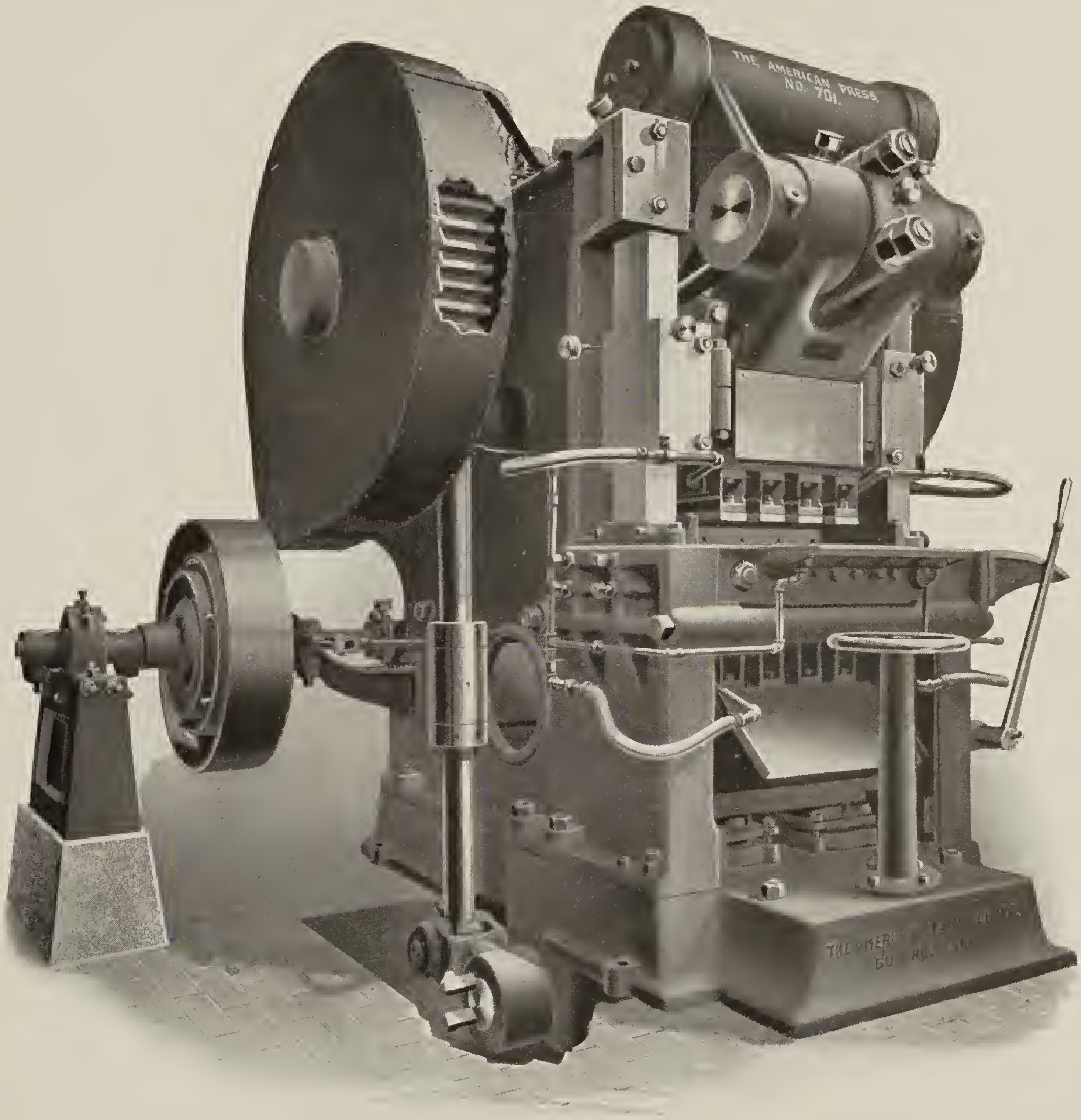
It is the practice of some factories to set the brick directly into the kiln from the press, while others prefer to dry them in an artificial dry kiln before they are burned. While the advisability of drying before burning depends somewhat on the nature of the clay it is generally conceded that more uniform results and a more desirable product can be secured if the brick are dried.

The amount of clay that can be successfully compressed into a brick of a given size depends largely upon the nature of the clay and the length of time the pressure remains upon the brick. Our machines are provided with a feed regulator for controlling the amount of clay the charger deposits in the mold. The feed may be quickly changed by means of a simple mechanism placed underneath the discharging table within easy reach of the operator.

In building our Dry Press Brick Machinery we use the best and most generously proportioned steel shafting, long bearings and proportionately strong gearing. In those parts which sustain the greatest strain and are subject to the most severe service, steel forgings and steel castings are employed. The mold frames are very heavy and are conveniently constructed for making quick changes of liners, for the purpose of regrinding, or for a change in size. Interchangeable liners of the most durable materials are used. They can be reground when worn. The upper and lower plungers are arranged for steam connections.

In design and construction these presses are built for efficient service. They are simple, accurate and substantial, and are carefully constructed and thoroughly tested before leaving the factory.

American No. 701 Four-Mold Dry Press Brick Machine



American No. 701 Four-Mold Dry Press Brick Machine

American No. 701 Four-Mold Dry Press Machine

THIS press is the latest development in construction of machines of similar design that have been in use many years. It has been strengthened in all its principal working parts by increasing the size of the respective parts, and we have substituted open hearth steel castings and semi-steel castings for many parts that were formerly made of gray iron castings, which has given us a press proportioned in every part to withstand exceptionally severe service.

SPECIFICATIONS

Gears

All gears are made of steel and the teeth are machine cut.

Gear Shields

The master gears and pinions are enclosed in suitable steel plate covers to protect them from the surrounding dirt and to guard the operators from possible accident.

Pinions

Working into the master gears are open hearth steel pinions with cut teeth, which, in combination with the hard steel gears, insure smooth running and durability.

Semi-Steel Parts

The following parts are made of semi-steel: Right and left-hand side frames, upper and lower toggles, upper cross-head, charger cam and charger arms.

Open Hearth Steel Castings

In addition to the steel pinions, which are cut from open hearth steel blanks, the following parts are made from open hearth steel castings: Lift-out rocker shaft and connecting parts, lift-out rocker arm, lift-out cam, lift-out cam arm, lift-out cylinder, lower cross-head and charger cam arm.

Top Toggle Pin

The top toggle shaft has been enlarged in this machine to 7½″ diameter. It is forged from open hearth steel of from 60 to 80 carbon, which insures good wearing surfaces and great strength.

Center Toggle Pin

This shaft has been increased to 7″ in diameter and is made from the same specifications as the top toggle pin.

Lower Toggle Pin

This shaft has a bearing throughout its entire length of the cross-head and is made of the same materials as the center and upper toggle pins.

Side-Bars

The tension side-bars are of heavy section and are forged from steel that shows a tensile strength of 80,000 pounds, with not to exceed 20 per cent elongation in 2″. The entire pressure is sustained by these forgings and they have been designed of ample strength to meet every possible requirement.

Cross-Head

The semi-steel upper cross-head is made from strengthened pattern. The shaft in same has a bearing throughout its entire length which makes a very rigid construction.

Charger Table

The charger table is faced with removable steel plate, so that when it becomes worn it can be refaced at small cost. This is an important provision in a press working ores or sharp silica sand.

Mold Frame

The front section of the mold frame is likewise faced with steel liners to take care of renewals.

Mold Charger

Both the top and bottom wearing surfaces of the charger are faced with removable steel plates, which serve to greatly strengthen the charger as well as to take care of the wear on this important part, as well as obviating the necessity of installing a new charger when the surfaces become worn.

Bearings

All bearings are large, and, with the exception of the charger rocker shaft, are babbitted with a high grade of bearing metal. The charger rocker shaft is bronze bushed.

Mold

The mold liners are what we designate as soft back steel liners. They can be readily removed and replaced when worn.

Steam Heat

The upper and lower mold standards and discharge table are connected with steam pipes, so that the molds and pressure plates are steam heated, thereby preventing the materials from adhering to them. Most materials stick badly when the die plates are cold, but give very little trouble with the steam heated plates.

Operating Lever

The operating lever is placed at the right hand of the mold table in a convenient location, and with a single stroke of this lever the clutch on the driving pulley is disconnected and the clutch on the brake is thrown in so that the machine can be instantly stopped.

Depth of Material

There is a regulating wheel for depth of material. It is located immediately underneath the discharge table and in front of the operator, so that in case of variation of the material in moisture or other ingredients the depth of material can be increased or diminished, as may be necessary, to secure the proper pressure on the briquettes. Turning the wheel to the right or left a very short distance gives a required adjustment.

Gear Ratio

The machine is back geared 34.2 to 1, which gives ample power to deliver the greatest pressure required for successfully making Dry Press Brick.

Pulley

The press is equipped with a 36″ x 8½″ Bucyrus Disc Type friction-clutch pulley. The pulley is keyed to the driving shaft and the latter is supported by an outboard bearing in addition to the two bearings in the side frames.

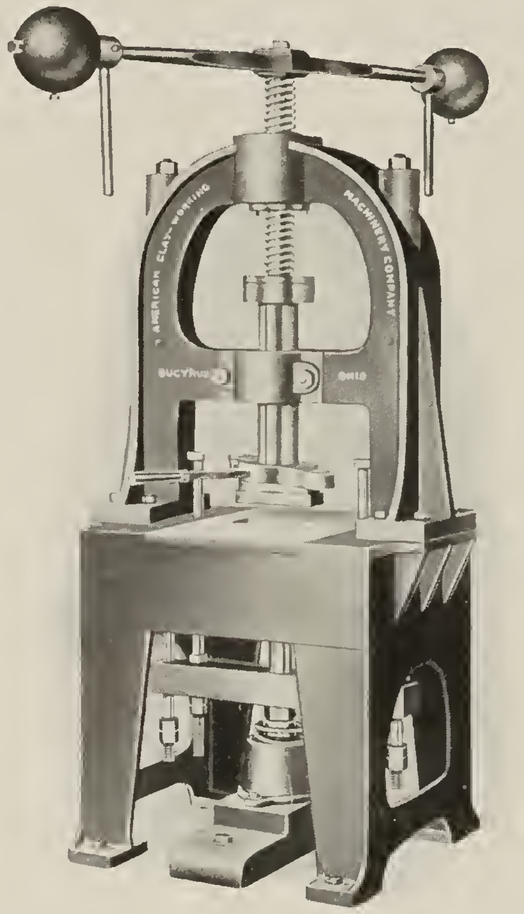
Weight

32,000 pounds.

DIMENSIONS

Floor space	9′ 6″ wide x 8′ long
Extreme height above floor line	8′ 6″
Length of foundation	12′ 7″
Width of foundation	8′ 11½″
Depth of foundation	5′ 8″
Distance from center line of a machine to center line of pulley	4′ 1½″

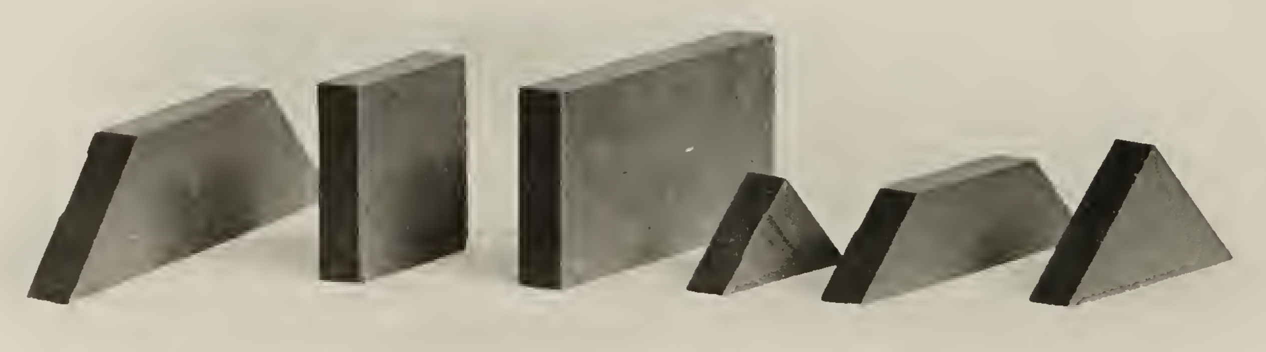
American No. 7 Hand-Power Screw Press



A HAND-POWER press is a valuable and convenient machine to have about a plant. It can be used on short runs of special sizes and in the general work of the plant.

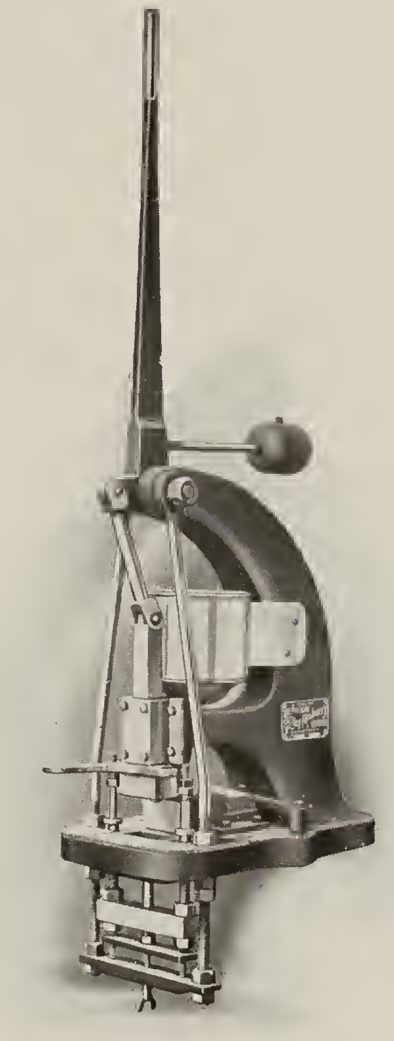
Our No. 7 Screw Press is adapted for pressing granulous clay into dry press brick, fine floor tile, mantel tile or fancy shapes. This press is furnished with a long handle, fitted with adjustable weight balls, which makes operation easy, no matter what size of ware is being pressed. An ingenious device discharges the tile when the screw is run up. The planed surfaces of the upper side frame are bolted to the base casting which is planed to insure a perfect joint. Heavy steel tie rods add to the strength of the press.

The mold box has a depth of 4 to 8″, as may be ordered according to requirements. Largest mold that can be used is 12″ square. All molds are carefully made to the exact size and design as ordered. Floor space, 2 x 3′; height 6′ 6″; height to top of table, 32″. Weight 2400 pounds.



Floor Tiling Made on American No. 7 Hand-Power Screw Press

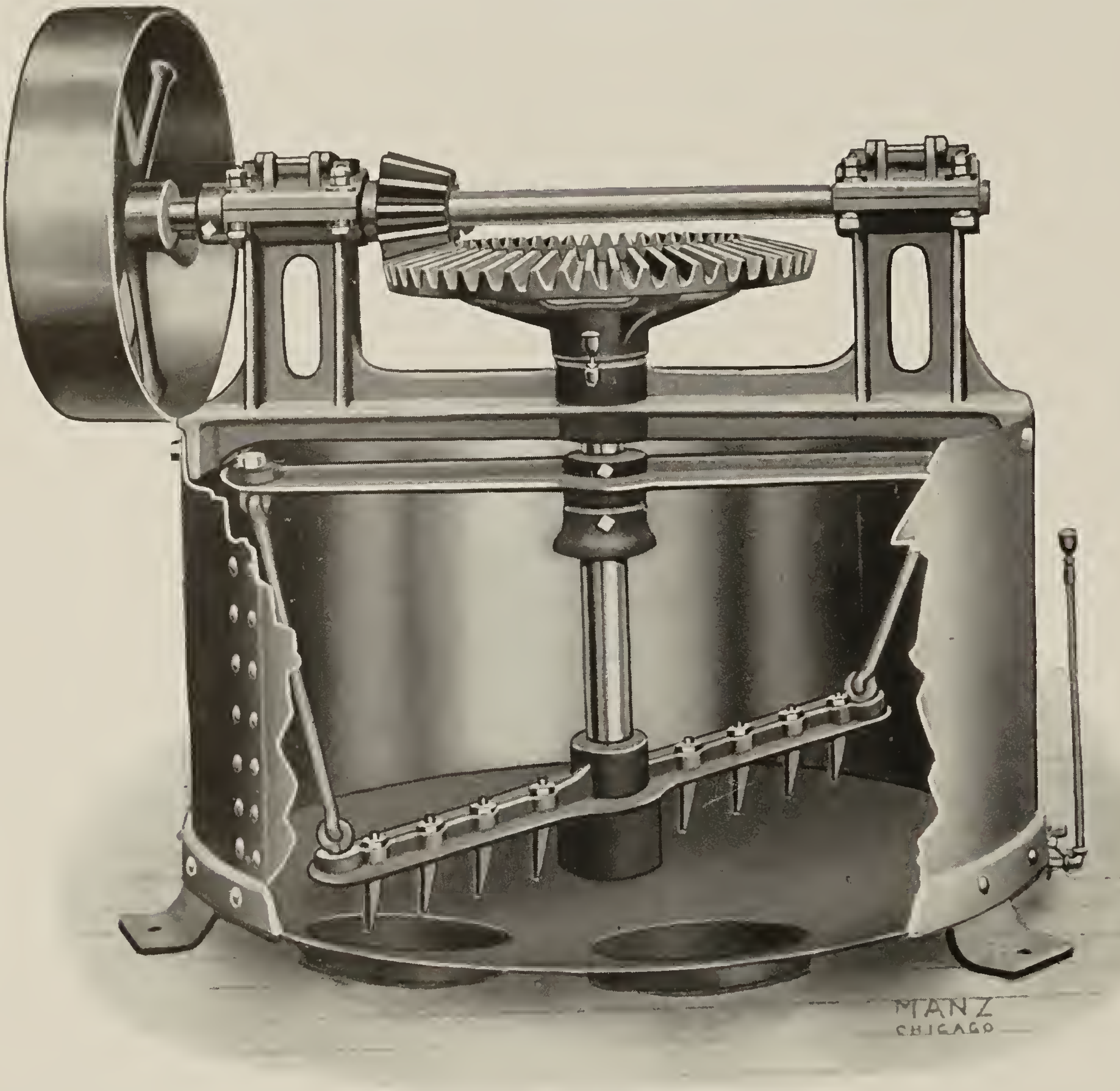
American No. 172 Briquette Press



THE American Briquette Press is adapted to the manufacture of small sample dry press brick. The frame is a substantial one-piece casting carefully machined. The pressure is applied by a lever acting in connection with a toggle. The depth of mold is adjustable and the one lever ejects the brick when pressed as well as applying the pressure. The capacity is limited to the speed of the operator. Good samples can be made on this press and the pressure plates can be lettered with name of the company or trade name of the brick, thus making a good advertisement.

The press is 14″ wide, 18″ long and 5′ high including the lever. Size of mold 3¼″ by 1¾″. Size of clay hopper 7″ diameter, depth 6″.

American No. 1 Agitating Clay Feeder



American No. 1 Agitating Clay Feeder

IN construction the machine consists of a large steel pan or tub having two openings in the bottom through which the material passes to the brick machine. In the center of the tub is a vertical shaft to which is attached a heavy arm which operates a drag which contains the agitating device. This drag consists of a horizontal knife bar which is vertically adjustable on the center shaft and which is provided with a series of steel blades on the under side. This knife bar revolves with the shaft and adjusts itself to accommodate the amount of material in the machine.

The machine is made entirely of iron and steel and is simple, strong and durable. The materials to be mixed are spouted into the machine near the center and by the action of the agitating blades they are thoroughly mixed and at the same time gradually move toward the discharge openings.

The machine is fitted with tight and loose pulleys 30″ in diameter, 6″ face, which should be operated at from 40 to 60 revolutions per minute, according to the capacity required. The shafts are steel and all bearings are long and well babbitted. In capacity this machine is equal to one Four-mold Dry Press Machine.

WARCO
BUCYRUS
OHIO

Roofing Tile Department

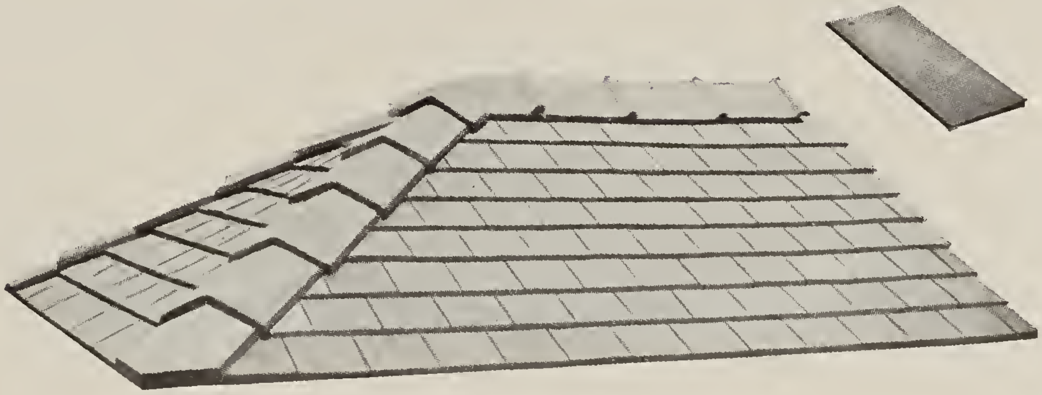
The Roofing Tile Industry

CLAY as a roofing material is of by no means recent origin. The earliest history of civilization finds a clay-covered thatch as the roof of even the most primitive habitation. It is only in comparatively recent years that attention has been turned to the evolution of unbaked clay as a roofing material to the excellent roofing tile of today. The change came by degrees until the United States took up the industry and with characteristic energy pushed it to prominence and perfection. The earlier history of this country found roofing tile inadvisable for use. Though this roofing material has been in use in foreign countries for centuries, the cheaper material to be had here in abundance prevented the use of tile. Demand has placed the wooden shingle out of the race because the forests of the country are disappearing and because the many slate quarries have been making inroads upon the territory of the wooden shingle. The cost of the slate has been increased with the advance in the price of labor, and the manufacture of roofing tile has been perfected to such an extent that there is little difference in the cost of a good slate roof and one of roofing tile. From a permanent investment standpoint and taking appearances into consideration, the roofing tile is by far superior and the demand has increased accordingly.

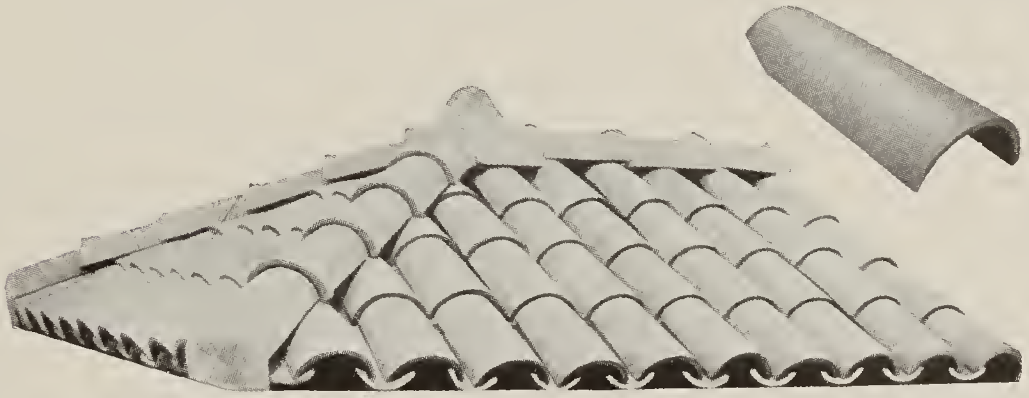
The manufacture of roofing tile depends largely upon the clay, and the clay worker who has a clay which will make a good roofing tile is particularly fortunate. There is a ready demand for good roofing tile at a good price and the manufacture is removed from the closer competition which exists in the marketing of some of the other clay products. The equipment of a roofing tile plant is not extensive, though the handling of the product must be carefully looked after to insure a first-class article. On the quantity of products depends the size of the equipment, but whether you desire a large or small capacity plant you will find in this catalogue the necessary machinery and appliances to exactly meet your needs. In the making of clots or blanks for pressing into tile, our heavy auger machinery can be used with almost an unlimited capacity, or some of the smaller and slower machinery can be installed. In presses there is the same range from heavy machines of large capacity down to the hand-power presses. In other machinery there is a similar range. If it is desired to add a roofing tile branch to an already established clay plant or to change a plant to the manufacture of roofing tile, it is probabl much of the present equipment can be used. If you are interested in this branch of the clay trade it would be an excellent plan to have your clay tested for the manufacture of roofing tile. Our clay testing department can make this test for you and will send you finished samples showing just what can be done with your clay.

Correspondence is solicited and will receive prompt attention.

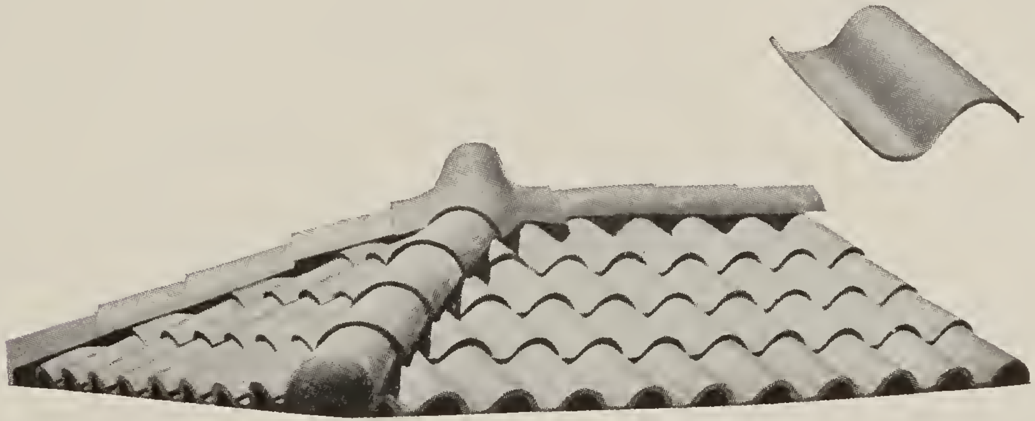
Standard Roofing Tile Shapes



Clay Shingles



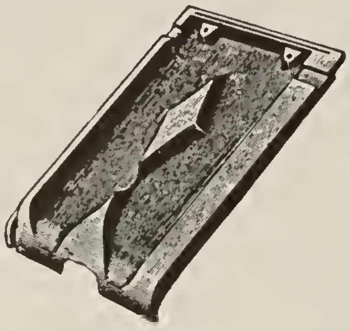
Mission Tile



Spanish Tile

Roofing Tile Designs

WHILE there are a number of standard styles of roofing tile, clay shingles, finials and crestings, there are also a number of specials in the trade. Some of these cannot be made by machinery, but are strictly hand-made shapes. Where it is possible to make a design by machinery we can supply the machines and appliances best adapted to the work. We can also supply any dies wanted for any standard or special shapes. The designs here shown are only a few of many, and in addition to roofing tile and clay shingles they show finials, crestings and hip rolls. Correspondence is solicited relative to machinery, methods and other particulars regarding the manufacture of roofing tile.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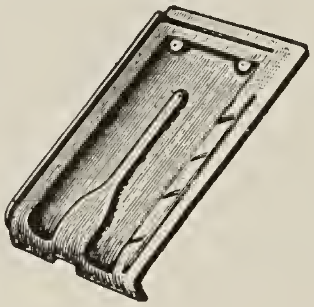
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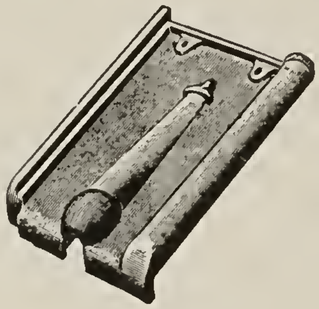
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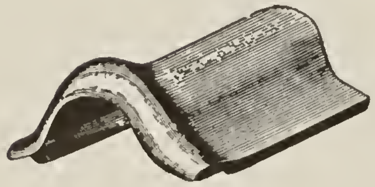
French Inter-Locking Tile

Standard Shapes of Roofing Tile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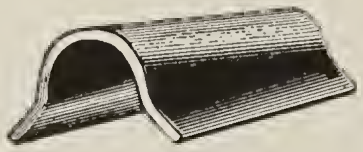
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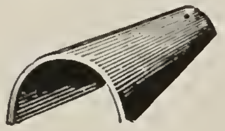
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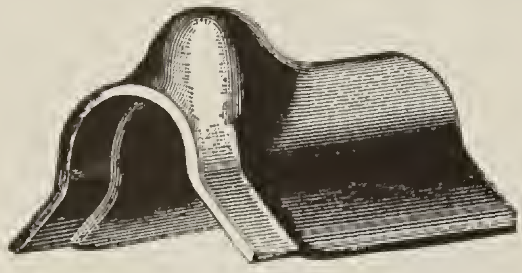
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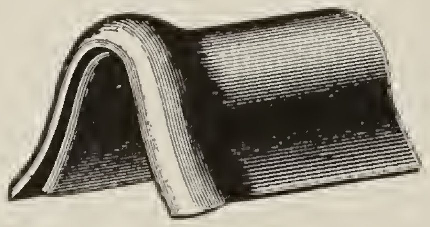
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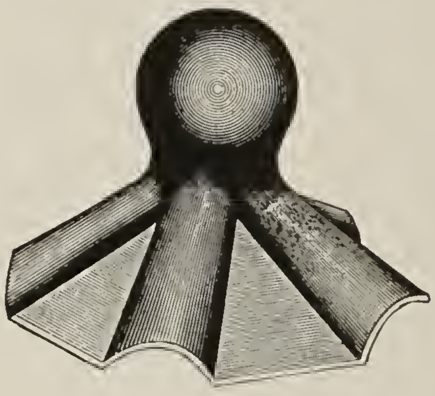
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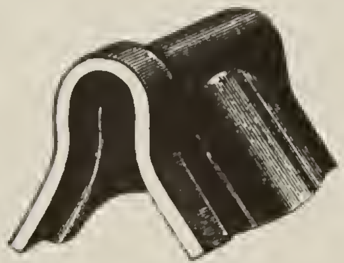
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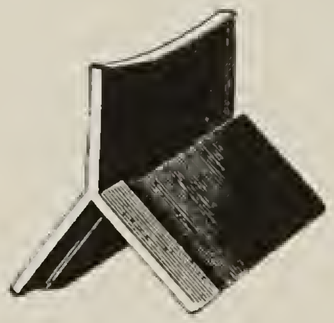
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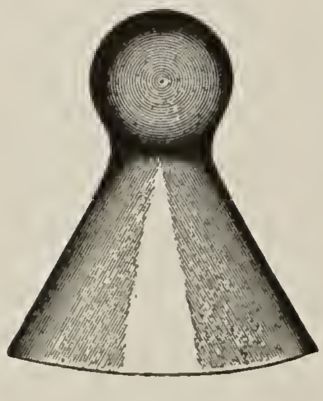
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Designs for Finials and Crestings and Hip Rolls

The Manufacture of Roofing Tile

WE have received numerous inquiries regarding the equipment of a roofing tile plant, cost of buildings, machinery, operation, etc. While we build a complete line of machinery for manufacturing roofing tile, it would be a difficult matter to give accurate figures without going thoroughly into the conditions which exist in each particular case, and being fully advised as to the capacity desired and styles of tile to be manufactured. There is such a wide variance in conditions and equipment that no two plants would figure exactly alike.

In order to make an intelligent estimate as to the cost of the plant, we should first become familiar with the circumstances and conditions governing the erection and operation of the plant, and should also prepare detail plans and specifications. There is such an increasing demand for roofing tile that it will be found advisable to so design and equip the plant that the capacity can be increased without disturbing the initial plant. As in the manufacture of other clay products there are different methods and practices in vogue, the best or most acceptable of which must be adopted. In the manufacture of roofing tile it is not always advisable to use the material direct from the bank. It is often best to harvest the clay and put it through a sweating and weathering process before attempting to use it. Where this is found advisable we recommend installing a clay storage building sufficient to hold six or eight months' supply. Through the center of this building an elevated track should be installed. The clay can be loaded in cars at the bank and drawn up into the building, where it should be deposited in a long, narrow pile and allowed to weather thoroughly before being used. To save expense in handling the clay from the storage shed, a conveyor extending the full length of the building should be installed under the floor of the storage shed. The conveyor should be installed in such a way that the clay can be fed to it by one man and delivered directly to the grinding machinery. The clay should be ground and screened very fine, and for this purpose a dry pan and screen should be used. After being screened the material is deposited in a clay storage bin, from which it is delivered as required to a wet pan. In the wet pan the material is thoroughly pugged and tempered, and from the wet pan it is delivered to a special balling machine, which forms the clay into balls convenient for handling. These balls of clay are placed in what is called the wet storage bin or cellar, where the clay is allowed to remain for some time before it is manufactured into tile. This wet storage process is found very beneficial and assists materially in producing tile of good quality. From the wet storage cellar the material is carried automatically and delivered to a pug mill or second balling machine, from which it is delivered directly to the tile-making machine, or to a machine which forms the clots to be repressed if interlocking roofing tile is to be manufactured. For the equipment of a modern and model plant we recommend the following machinery:

Four clay cars, one winding drum with cable, one dry pan, one screen, one wet pan, two taper tub pug mills, two automatic cutters for cutting balls, necessary elevators and conveyors to handle the material as near automatically as possible, two auger machines (one fitted with dies and cutters to manufacture "S"-shaped tile and clay shingles, the other fitted with dies and cutters to manufacture clots to be repressed into interlocking tile, hip rolls, valley tile, etc.); also dies for sagger tile, which would be used in setting the roofing tile in the kilns for burning; one large press fitted with two sets of dies for interlocking tile, one small press fitted with four sets of dies for making hip rolls and valley tile, to be used with interlocking tile, "S"-shaped tile and clay shingles.

The small press should also be fitted with one die for making the bottom "S"-shaped tile.

There would also be required a number of plaster molds for making crestings and finials. These are made by hand, being generally too large to make in a press. These plaster molds are made as required and additional molds or dies may be made for the presses or machines as may be required according to the size or design of the tile or shingle to be manufactured. A modern plant should be fitted to make a large variety of tile, hip rolls, crestings, finials, etc., but the demand will regulate the number and kind of molds and dies required.

For drying the tiles and shingles we recommend the use of a tunnel dryer. By this system the tile are placed on pallets and loaded on steel rack cars at the press or machine, and are placed in the tunnel for drying. After the tile are dried the cars are transferred directly to the kiln, where the tile are set, ready for burning. This system eliminates considerable handling and saves damage to the tile. For heating the dryer a steam coil heater could be used, and it should also be arranged to utilize the waste heat from the cooling kilns. In this way it is possible to dry the tile at the least possible cost, and at the same time give a fixed daily output of dried ware ready to be set in the kiln for burning. For burning tile it will be found advantageous to use a substantial down-draft kiln of the most improved type, calculated to save fuel and to give a uniform burn in order to produce the ware of uniform color and texture. To operate the plant we recommend the installation of a high-grade economical engine of 175 horse-power, and two high-grade boilers, each of 150 horse-power. This will give sufficient steam for operating the engine and also for the dryer. This power plant is of greater capacity than would be required for the first installation, but anticipating an increased demand and the advisability of installing additional machinery later on, ample power to provide for increasing capacity is recommended. The construction of the dryer is such that it can be readily increased when it is found advisable to increase the capacity of the plant, and additional kilns can be erected at any time extensions may become necessary.

This model plant would have a capacity of 40 squares of interlocking tile and 20 squares of clay shingles per day, together with the necessary hip rolls, valley tile, crestings and finials. The arrangements of the machinery should be such as to reduce the cost of production to the minimum. The demand for roofing tile and the price is such that clay workers would find it a profitable investment to produce this popular building material. Your clay can be tested in our testing room and samples of the burned tile sent for your inspection.

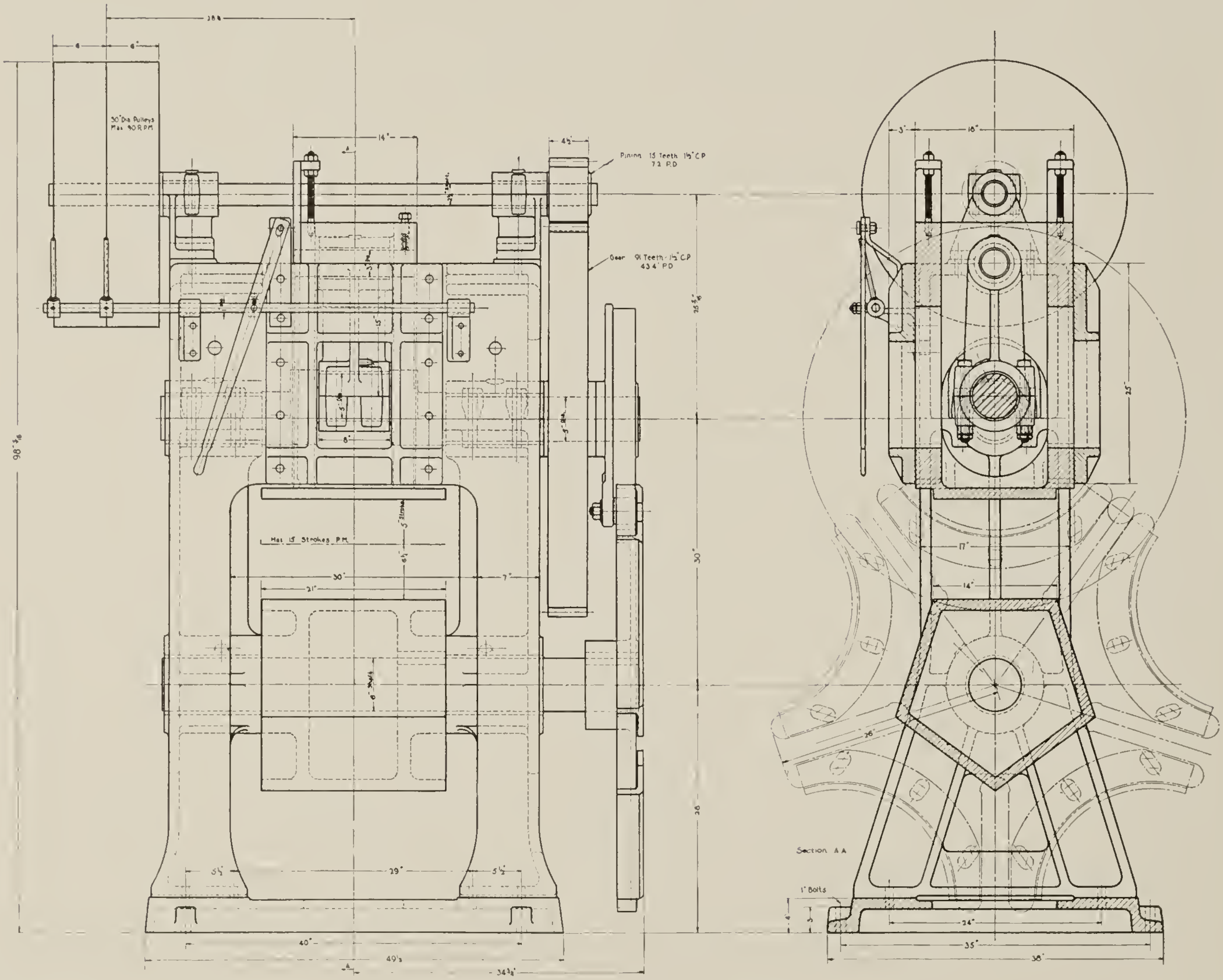
The equipment here mentioned is for a large plant, but should not be construed to be a suggestion as to the minimum capacity which we recommend. As in other branches of the clay trade, the plant can be made of any capacity, and we supply machines for greater or smaller capacity than the one outlined. Our range is from hand-power to the largest plants. Correspondence on this or any other subject pertaining to clay products is invited.

Plaster Molds for Roofing Tile

SOFT water is required in making plaster molds. This may be obtained from the pipes of the drying apparatus or from a cistern into which the rain water from the roof of the factory is conducted. There should be a room, for the plaster worker, convenient to the press. This room should have a strong bench, on which to clean the plaster from the mold boxes, on which there should be a small hand press for pressing the mold boxes on the "mother forms." A tank should be provided for soaking the molds. The tank should be 15″ wide, 8″ deep, and 6′ long, having two strips 1¼″ x 2½″ lengthways of the bottom. There should be a series of strong shelves sufficient to hold all the molds and "mother forms," as an orderly arrangement will greatly facilitate the work. These should be set on end on the shelves and leaning back against the wall so that their faces may all be seen. As soon as a mold is injured it should be remolded. In making the molds, the water and the plaster should be measured in order to avoid unnecessary waste and to insure a proper consistency. The mixture should be quickly and thoroughly stirred. If plaster is added after partially stirred it will make the plaster mold much weaker. The "mother form" should be perfectly clean and free from rust. For this reason it is preferable to make the pattern of the mother form of brass instead of iron. It is lubricated with soap and water prepared by boiling and skimming. This mixture should be about the consistency of a light varnish, and applied to the form with a brush. A part of the plaster should be spread on the form and a part in the box, and as soon as possible the box turned over on the form and the two placed under the hand press and pressed together. They may soon be removed from the press but should remain together for about twenty minutes. When separated all the plaster should be carefully cleaned from the edges of the mold. The mold should then be left on the shelf for half a day in order to give time for the plaster to harden. Before attaching to the tile press the die should be washed and then allowed to soak in the tank for a half hour. Attach the upper form, place the lower form in position with bolts set so that the mold can be moved, then turn the press until the two forms are together; then tighten the bolts.

The "mother forms" are made by attaching patterns of the tile in an upper and lower mold box. This is done by two screws passing through the bottom of each mold box and into the pattern binding them on two parallel strips. The space between the patterns and the mold boxes is filled with fluid plaster. If the newly molded tiles persistently adhere to either form, the pattern in the mother form should be set lower in the box and the one in the other form raised to correspond. The tiles may thus be made thinner or thicker as desired.

The pallet is put on the newly molded tile when it has revolved to first position after pressing, and held gently against it while the tile revolves to second position, when it drops off onto the pallet.



American No. 809 Pentagon Roofing Tile Press

American No. 809 Pentagon Roofing Tile Press

THE pentagon type press is universally used for the manufacture of standard roofing tile on a production basis.

The American No. 809 Pentagon Press is very simple, strong, durable, efficient, and occupies a minimum amount of space.

All bearings have ample area for the load with provision for lubrication and for taking up wear.

The movements are easy and the machine will stand up under a speed as fast as the operators can supply the clots and remove the ware.

The pentagon or five-sided revolving platen has finished faces 14″ x 21″ for attaching dies, is mounted on a 6″ diameter steel shaft, and is operated from an escapement wheel keyed to the shaft. The faces of the escapement are adjustable to take up wear and to insure even thickness of tile.

The crank shaft is forged from a steel billet and machined to 5″ diameter. The drive shaft is 2½″ diameter. The upper crosshead has a stroke of 5″, is gibbed for taking up wear and has a face 14″ x 21″ for attaching the die.

The gear, 43.4″ pitch diameter, 4½″ face, has 91 teeth.

The pinion, 7.2″ pitch diameter, 4½″ face, has 15 teeth.

A counter-weight in the main gear holds the crosshead on the up stroke and a simple device permits of turning the press by hand when changing or adjusting dies.

DIES OR MOLDS

The driven pulley is 30″ x 6″ and at 50 R. P. M. the machine will press 8 tile per minute.
Power required, 5 to 10 H. P.

CLEARANCE DIMENSIONS

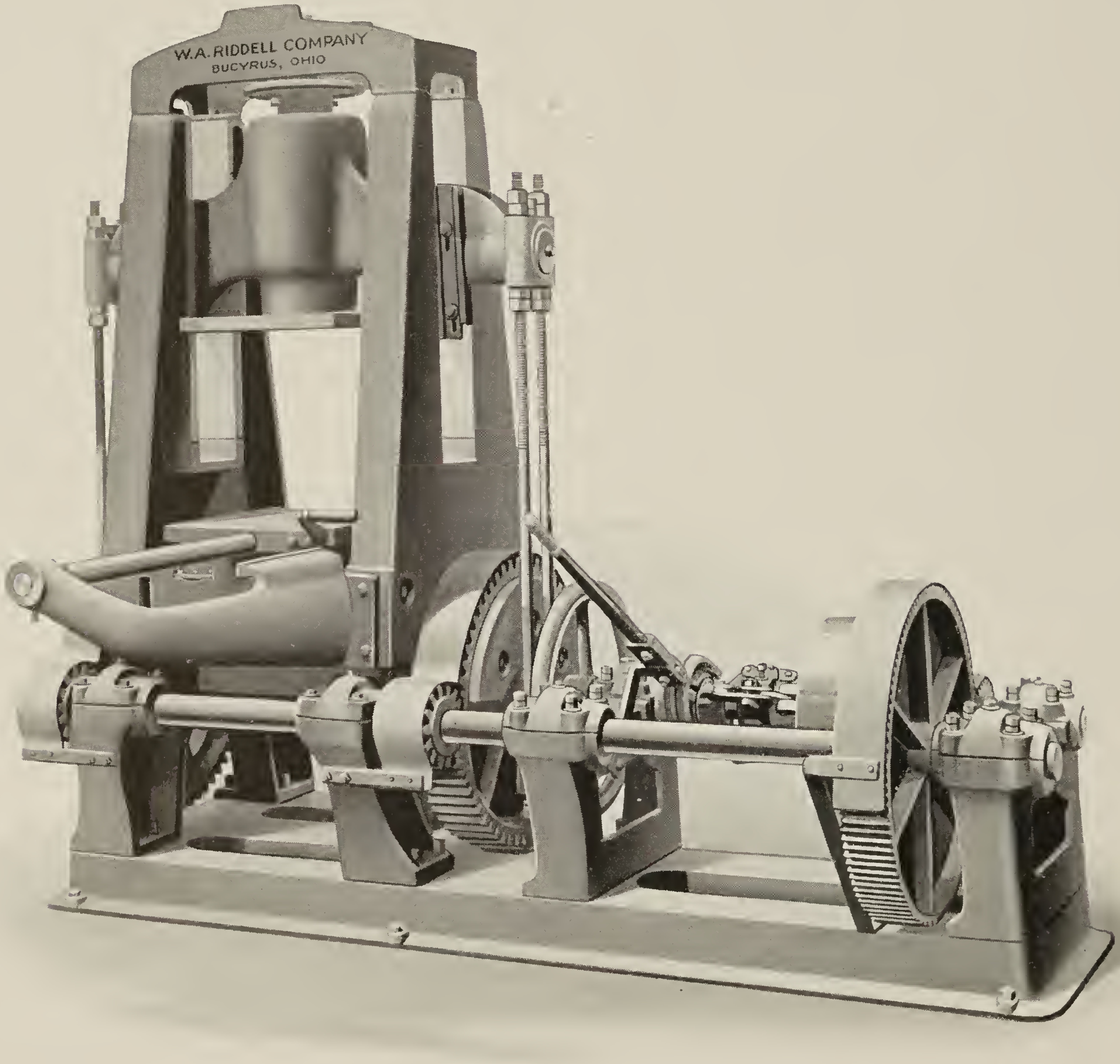
Width of base	4′ 1½″
Width over all	5′ 10″
Width center press to center pulleys	2′ 4¼″
Length of base	3′ 2″
Length over escapement wheel	4′ 6″
Height to top of pentagon	3′ 1″
Height to center of crank shaft	4′ 10″
Height to center of driving shaft	6′ 11¼″
Height over all	8′ 2¼″

Weight 8,000 pounds

DIES OR MOLDS

A set of molds for the No. 809 Press consists of six pieces, one to be attached to the plunger and five to be attached to the pentagon.

Molds are always made special, according to size and design of the tile to be made. Either metal or plaster molds may be used. Size and design of the tile and nature of the clay will govern the kind of mold to be used. Molds are not furnished with the press except on special order.



American No. 332 Roofing Tile Press

American No. 332 Roofing Tile Press

NO. 332 Roofing Tile Press is designed for making plain crestings, hip and ridge rolls, and odd shapes and sizes roofing tile.

It has a stroke of 10″ and the upper cross-head has a vertical adjustment of 20″ to accommodate dies for ware of various shapes and sizes.

It is substantially built and equipped with a friction-clutch pulley and a brake.

In operation the lower half of the die is attached to the cross-sliding platen, the upper half to the vertically moving platen. The lower platen is withdrawn, a clot placed on the lower portion of the die, then the platen, die and clot is shoved underneath the vertically moving portion of the die and against a stop and when the pressing mechanism has made one revolution, it is withdrawn in a finished condition, a pallet placed on top of the ware and the lower platen, lower section of the die with the ware and the pallet is turned over leaving the ware on the pallet.

Capacity is governed by skill of operator. The lower platen is 20″ wide x 22″ long, the upper platen 18″ wide x 22″ long, the crank shaft is 4″ diameter, intermediate shaft 3″ diameter, and the pulley shaft 2½″ diameter, lower crank pins 3″ diameter, while the cross-head pins are 3½″ diameter, and extend through and reinforce the steel cross-head.

All gears are machined from steel blanks and the teeth are cut from solid metal. All parts are mounted on a cast iron base properly machined to insure correct alignment of moving parts.

The cross-head is gibbed for taking up wear of the slides, and to insure accuracy of the ware made on this machine.

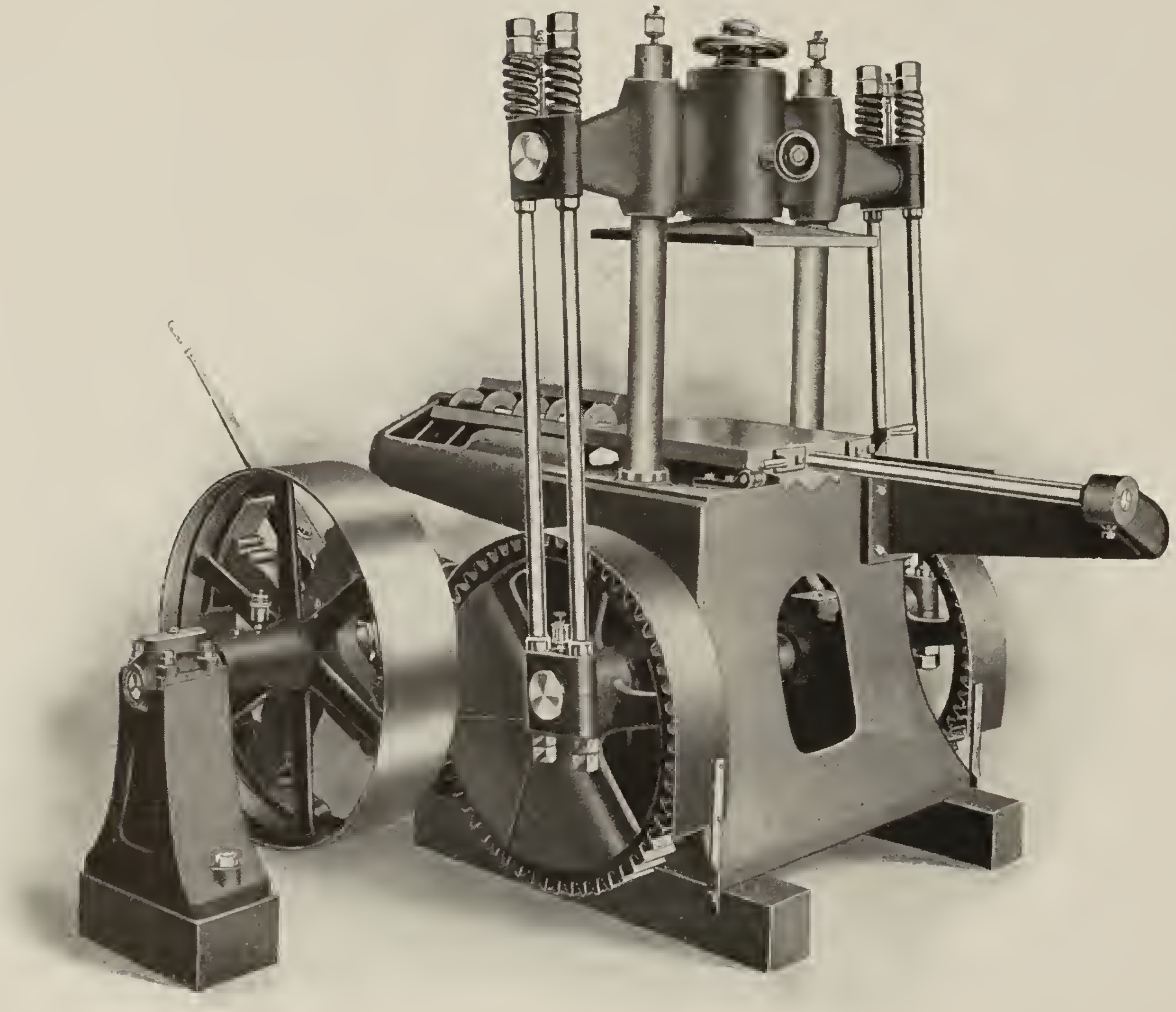
The friction-clutch pulley is 18″ diameter x 8″ face, and should be driven at around 160 rotations per minute.

Weight, 9,680 pounds.

Clearance Dimensions

Height over all	7′	8½″
Height to top of lower platen	3′	3¼″
Length over all	5′	8½″
Length of base	3′	5″
Width over all	8′	11″
Center of press to center of pulley	4′	11″
Center of press to end of crank pin	2′	3″

American No. 39 Roofing Tile Press



THE American No. 39 Roofing Tile Press is designed for making roofing tile in various shapes and sizes, also suitable for making plain crestings, hip rolls, ridge rolls, etc. The machine is substantially built in every detail, and its operation is smooth, quiet, and easy. The machine is designed for two operators, one stationed on each side of the machine to operate the mold tables.

A set of molds for this machine consists of three parts, two of which are duplicates and are attached to the mold tables, the other piece is attached to the upper cross-head or plunger. The mold tables are provided with ball bearings where they slide in onto the face plate or bed plate of the machine, and when under pressure these mold tables are at rest on the bed plate.

The operator places a clot of clay onto the mold and slides the mold table onto the bed plate under the plunger. After the tile has been pressed he draws the table toward him, permitting the operator on the opposite side of the machine to enter the mold table from that side. Operating in this manner a tile is pressed at each revolution of the machine. When the operator draws the mold table toward him it is supported on a steel shaft, which also acts as a pivot upon which to turn the table. The operator places a pallet on top of the tile as it is pressed in the mold, and then tips the mold table over so that it is upside down. This deposits the tile upon the pallet. The mold table is then turned back into position and is ready to receive another clot of clay to be pressed. The mold table is provided with a guide and with a stop, so that it is readily pushed onto the bed plate and stopped in the correct position so that the molds are in register.

The mold tables are 22″ long, and 20″ wide. They will receive a mold for the largest size roofing tile. The upper cross-head has an adjustment of 6″ to accommodate various thickness of molds. The machine has a stroke of 10″ and when the upper cross-head is down at the lowest point there is a distance of $10\frac{1}{2}$″ between the mold table and the face plate of the cross-head. This permits the machine to accommodate molds for hip rolls and similar pieces.

MOLDS

The No. 39 Roofing Tile Press may be furnished with cast iron molds made to suit the design and size of the tile or other articles to be pressed. *The molds are always made special, according to the design, and the prices are made accordingly.* The press may also be furnished with cast iron frames for attaching molds made of plaster of Paris. In many clays the plaster molds give better results than the metal molds. The molds for this press consist of three pieces, two to be attached to the mold tables, and one piece to be attached to the upper plunger, or cross-head.

RATED CAPACITY PER HOUR

The capacity of this machine is governed by the speed at which the machine is operated, the size, design and kind of ware that is being pressed, and by the ability of the operators. Two operators with their helpers working under the most favorable conditions should be able to press three hundred pieces per hour.

SPECIFICATIONS

Main Frame

The main frame is a heavy one-piece casting carrying all of the shaft bearings, and supporting the guides for the upper cross-head. This frame is made heavy and substantial and supports the mold tables when pressure is being applied to form the tile.

Shaft and Guides

The forged steel crank shaft is 4″ diameter, the driving shaft is $2\frac{1}{2}$″ diameter, and the shafts upon which the mold tables slide are 2″ diameter. The hammered steel guides for the cross-head are $3\frac{1}{2}$″ in diameter. These steel guides are inserted in bored holes in the frame, and firmly held in position. The top ends of the guides are drilled for oil cups, and oil passages for lubricating the guides.

Bearings

The crank shaft bearings are 12″ long. The driving shaft bearings are 8″ long. These bearings are all well babbitted with the best metal for the service required.

Gears

The gears are cast American gear metal. They are $1\frac{3}{4}$″ pitch, 4″ face. The master gears or crank gears are $31\frac{3}{4}$″ diameter. The driving pinions are $8\frac{7}{16}$″ diameter. Ratio of gears 3.9 to 1. All gears are covered with sheet steel guards. The master gears are cast with counter-weights to permit stopping the press on the up-stroke.

Connecting Rods and Crank Pins

Double connecting rods are used on each side of the machine to connect the crank gear and the upper cross-head. The connecting rods are fitted with split bearings and provided with safety springs to equalize the pressure when the clot of clay may be more than is required to fill the mold. The connecting rods are $1\frac{5}{8}$″ diameter. The crank pins in the crank gears are forged steel $3\frac{1}{4}$″ diameter.

Mold Tables

The mold tables are 22″ long and 20″ wide. The tables slide in onto the bed plate, and they are supported on a steel shaft when they are drawn out from under the upper cross-head. These mold tables are operated by hand, and are so equipped that they will operate very easily. They are provided with guides and stops which permit ready operation, and make it possible to place the mold in register with the upper cross-head, without difficulty.

Upper Cross-Head

The upper cross-head is provided with an adjustable pressure foot 20″ wide, 22″ long. It is provided with a hand wheel and lock nut for operating the adjustment and regulating the distance between the top of the mold table and the upper pressure foot to suit the height of the mold used. The maximum distance between the mold table and upper pressure foot is 20½″, and there is an adjustment of 6″ in the upper cross-head.

Driving Pulley

The machine is furnished with a friction-clutch driving pulley 36″ diameter, 8″ face.

Speed

Speed of driving pulley 25 R.P.M. to 40 R.P.M., according to the capacity required, and the kind of ware being pressed.

Power

The power required to operate this press will vary from 5 to 10 H.P., according to the kind of ware being manufactured and character of material used.

Weight

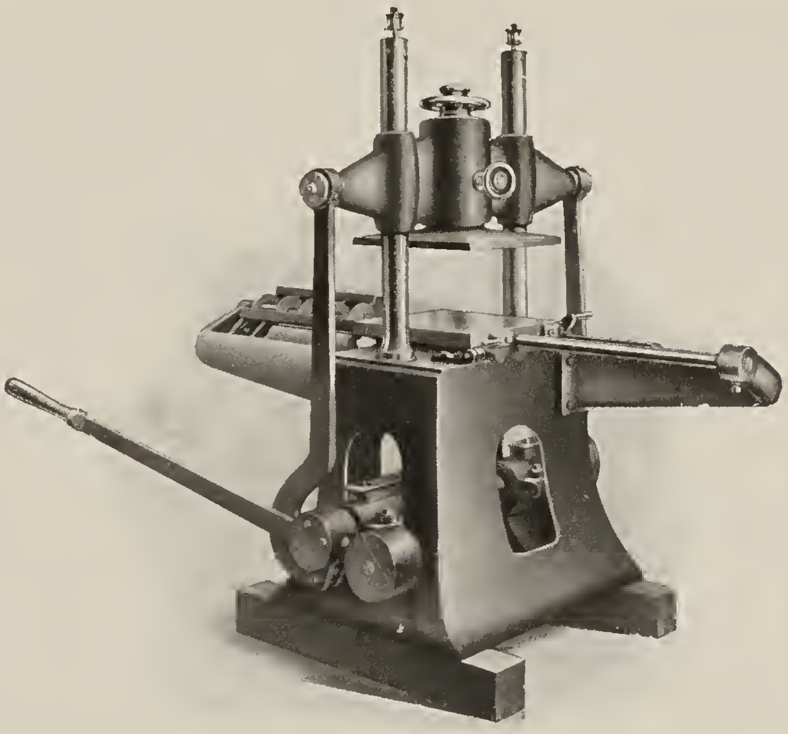
The weight of the machine complete, without molds, is 5,870 pounds.

DIMENSIONS

Height over all	7′	3″
Width over all	7′	3″
Length over all	7′	8″
Distance from center of machine to center of driving pulley	3′	3″
Height from floor to center of driving pulley	2′	
Height from floor to top of table	3′	8″
Distance from center of machine to center of driving shaft	1′	8″

THIS UNIQUE BRICK BOND ADDS CHARACTER AND CHARM
There is a graceful dignity in this English type house—secured largely through the harmony between the lines of the building and the attractive brickwork.

American No. 47 Hand-Power Roofing Tile Press



THE American No. 47 Roofing Tile press is designed for making roofing tile in medium sizes, operating by hand power. The machine is substantially built in every detail, and its operation is very simple. The machine is designed for three operators, one stationed on each side of the machine to operate the mold tables, and one to operate the plunger to press the tile.

A set of molds for this machine consists of three parts, two of which are duplicates and are attached to the mold tables. The other piece is attached to the upper crosshead or plunger. The mold tables are provided with ball bearings where they slide in onto the face plate or bed plate of the machine and when under pressure these mold tables are at rest on the bed plate. The operator places a clot of clay onto the mold and slides the mold table onto the bed plate under the plunger. After the tile has been pressed he draws the table toward him, permitting the operator on the opposite of the machine to enter the mold table from that side. Operating in this manner a tile is pressed as rapidly as possible by hand power. When the operator draws the mold table toward him it is supported on a steel shaft, which also acts as a pivot upon which to turn the table. The operator places a pallet on the tile as it is pressed in the mold, and then tips the mold table over so that it is upside down. This deposits the tile upon the pallet. The mold table is then turned back into position and is ready to receive another clot of clay to be pressed. The mold table is provided with a guide and with a stop, so that it is readily pushed onto the bed plate and stopped in the correct position so that the molds are in register.

The mold tables are 14″ long, and 12″ wide. They will receive a mold for a medium size roofing tile. The upper crosshead has an adjustment of 5″ to accommodate various thicknesses of molds. The machine has a stroke of 8″.

MOLD

The No. 47 Roofing Tile Press may be furnished with cast iron molds made to suit the design and size of the tile or other articles to be pressed. The molds are always made special, according to the design, and the prices are made accordingly. The press may also be furnished with cast iron frames for attaching molds made of plaster of Paris. In many clays the plaster molds give better results than the metal molds. The molds for this press consists of three pieces, two to be attached to the mold tables, and one piece to be attached to the upper plunger, or crosshead.

RATED CAPACITY PER HOUR

The capacity of this machine is governed by the size, design and kind of ware that is being pressed, and by the ability of the operators. Three operators with their helpers working under the most favorable conditions should be able to press one hundred pieces per hour.

SPECIFICATIONS

Main Frame

The main frame is a heavy one piece casting, carrying all of the shaft bearings, and supporting the guides for the upper crosshead. This frame is made heavy and substantial and supports the mold tables when pressure is being applied to form the tile.

Shaft and Guides

The forged steel crank is 3½″ diameter and the shafts upon which the mold tables slide are 1¾″ diameter. The hammered steel guides for the crosshead are 3″ diameter. These steel guides are inserted in bored holes in the frame, and firmly held in position. The top ends of the guides are drilled for oil cups, and oil passages for lubricating the guides.

Bearings

The crank shaft bearings are 10″ long. These bearings are all well babbitted with best metal for the service required.

Connecting Rods and Crank

Connecting rods are used on each side of the machine to connect the crank and the upper crosshead. These are made of flat bar steel 1″ thick. The two cranks have a stroke of 8″ and are provided with counter-weights to permit stopping the press on the up stroke. The operating lever is 4′ long.

Mold Tables

The two mold tables are 14″ long and 12″ wide. The tables are fitted with ball bearings where they slide in onto the bed plate, and they are supported on the steel shaft where they are drawn out from under the upper crosshead. They are provided with guides and stops, which permit ready operation, and make it possible to place the mold in register with the upper crosshead without difficulty.

Upper CrossHead

The upper crosshead is provided with an adjustable pressure foot 12″ wide, 14″ long. It is provided with a hand wheel and lock nut for operating the adjustment and regulating the distance between the top of the mold table and the upper pressure foot to suit the height of the mold used. The maximum distance between the mold table and upper pressure foot is 18½″ and there is an adjustment of 5″ in the upper crosshead.

Weight

The weight of the machine complete, without molds, is 2,000 pounds.

DIMENSIONS

Height over all	5′	7″
Width over all	3′	4″
Length over all	7′	
Height from floor to top of table	2′	9″

WARCO
BUCYRUS
OHIO

Sewer Pipe Press Department

American Sewer Pipe Machinery

THE demand for better equipment in modern sewer pipe plants has led to almost a complete revolution in the building of this class of clay-working machinery and appliances. In these improvements the W. A. Riddell Co. has taken a leading part. Our machinery has long been recognized as being well designed and exceptionally well built. A superior combination of methods, material and workmanship has given our line of sewer pipe machinery and appliances a quality which is recognized and which is an assurance of successful operation. Each machine is, in every detail, built according to high-grade engine practice. Our line of cutters includes both automatic and hand power, and we make trucks, rounders, formers, trays, turners, drums and other appliances, as well as any dies which may be required. The frames are carefully made of steel, our steel channel lattice-work frame being a most substantial setting for this class of machinery. The designing of sewer pipe plants for the economical handling of material and ware has been made a special study by our Engineering Department and we will be pleased to take up the matter with those interested.

American Standard Steam Sewer Pipe Press

OUR steam press has been redesigned and improved for the purpose of obtaining increased production, ease of control, and economy of operation.

By mounting the piston valve on the top cylinder head, a more direct application of steam to the piston is obtained, resulting in a quickened pressing action.

The valve is on similar lines to that of the uniflow steam engine, is practically steam tight, completely balanced, easily operated and comparatively free from frictional resistance to the flow of steam, reducing the amount of pressure drop during the pressing stroke. A counter balance carries the weight of valve and steam. A single piston rod connects the follower head in steam cylinder to the pressure head in clay cylinder and the top face of pressure head is conical, permitting the accumulation and storage of sufficient clay above the head while in action to fill the clay cylinder promptly on the completion of the up stroke. The cone is highly polished to prevent adherence of clay.

The steam cylinder is 44″ bore and 60″ stroke, and is built to withstand a working pressure of 150 pounds per square inch with a good safety factor.

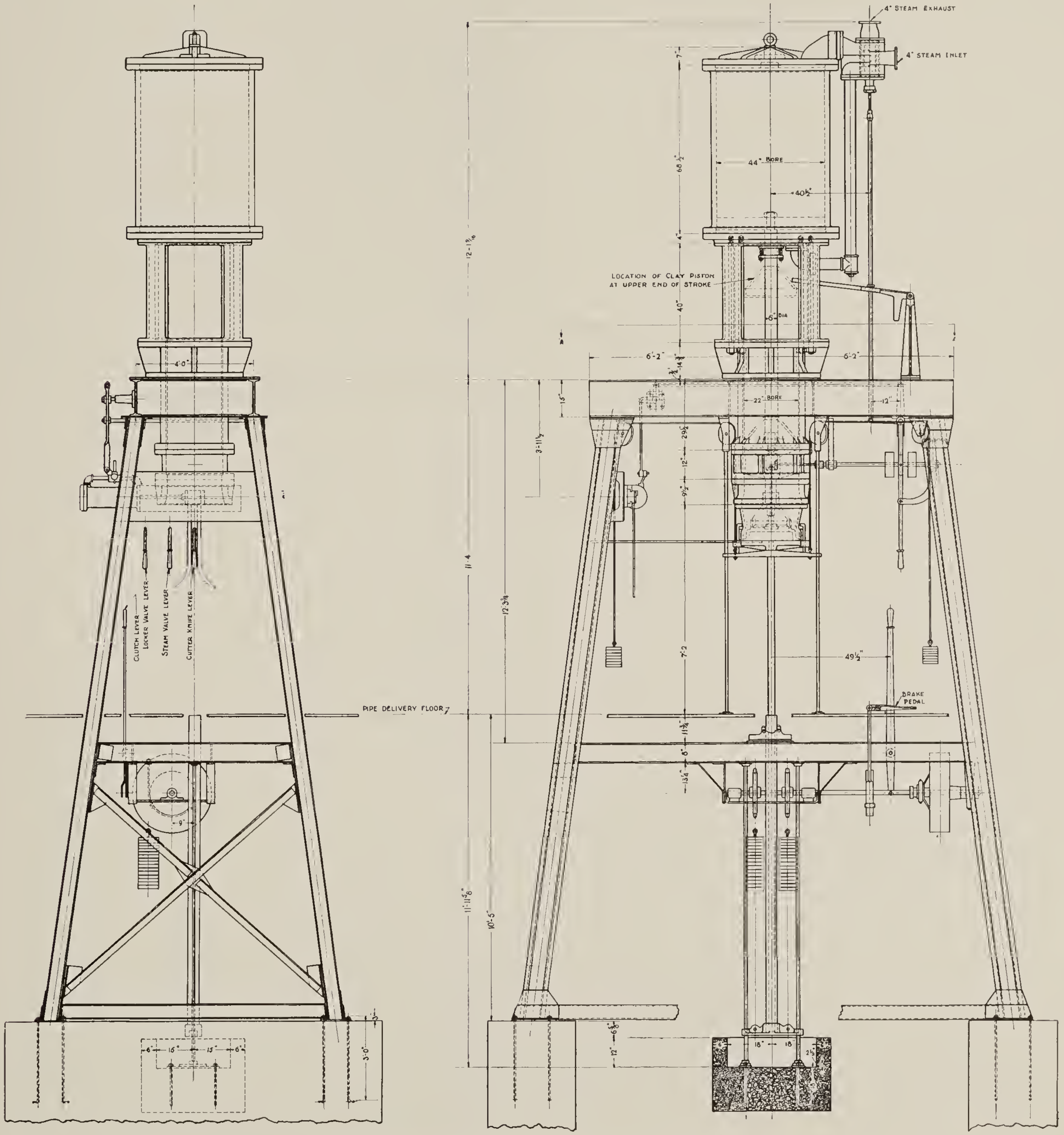
The clay cylinder has a renewable bushing, 22″ bore or less, 60″ stroke, and is built to withstand a pressure of 600 pounds per square inch with a high safety factor.

The cutter shaft is driven by two friction clutch pulleys.

A steam locker is supplied for making large and medium sized pipe.

The delivery mechanism is operated by power from a friction clutch pulley, is properly counter weighted, and is supplied with a brake operated by a foot pedal.

The steel frame is built either for first, second, or third floor delivery. Extensions are supplied for various sized standard dies. We also supply a steam jack for lifting dies, extensions rings, etc., which facilitates changing the larger and heavier dies.



American Sewer Pipe Press—Size 44"x60"x22"

Steam Sewer Pipe Press

Used for the Manufacture of Various Kinds of Clay Products

WHILE the steam press was developed and is used extensively in the manufacture of sewer pipe in all sizes, it is also well adapted for the manufacture of many other kinds of clay products, such as drain tile, fireproofing, hollow building blocks, fire brick, fire clay blocks, paving block and building brick. We make and are prepared to furnish all of the necessary attachments required with our steam presses for the manufacture of these different kinds of clay products.

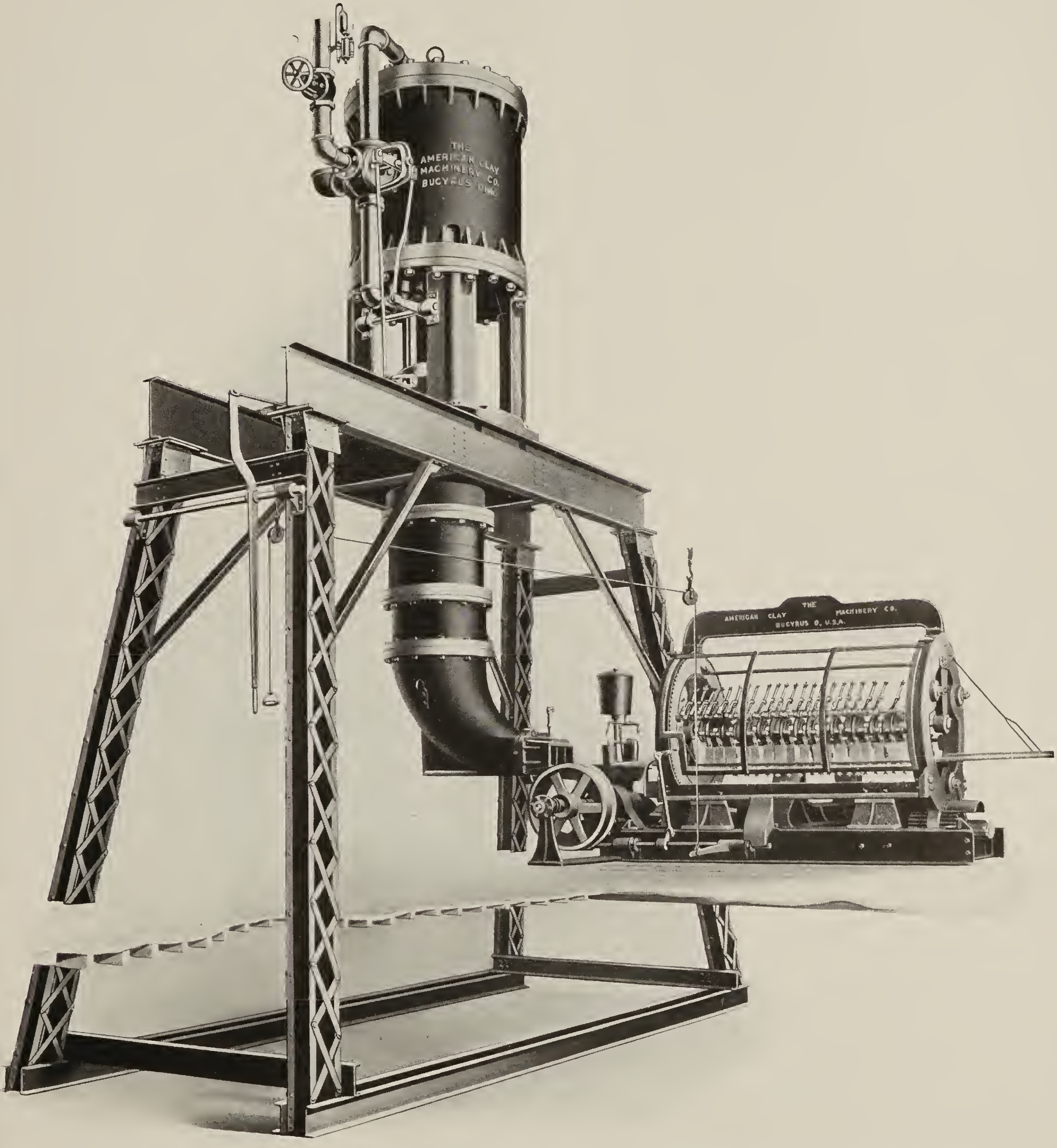
When the press is to be used only for making sewer pipe it is furnished with a steel frame for mounting, so that the pipe will be delivered on the second floor of the factory, but when it is to be used for making brick as well as pipe and other kinds of ware it is furnished with a steel frame for mounting, so that the product is delivered on the first floor of the factory.

Sewer pipe, large drain tile and large sizes of fire-proofing or hollow building block are delivered from the press in a vertical position and the different dies for this class of product are made to bolt on the lower end of the clay cylinder.

When making fire brick, paving block or building brick it is necessary that the column of clay be delivered in a horizontal position, and to accomplish this a goose-neck is attached to the lower end of the clay cylinder and the dies are made to attach to the goose-neck. Small drain tile and small hollow building tile can be made in this way in a horizontal position. For handling the goose-neck when not in use on the steam press we use the American No. 741 Goose-Neck Truck.

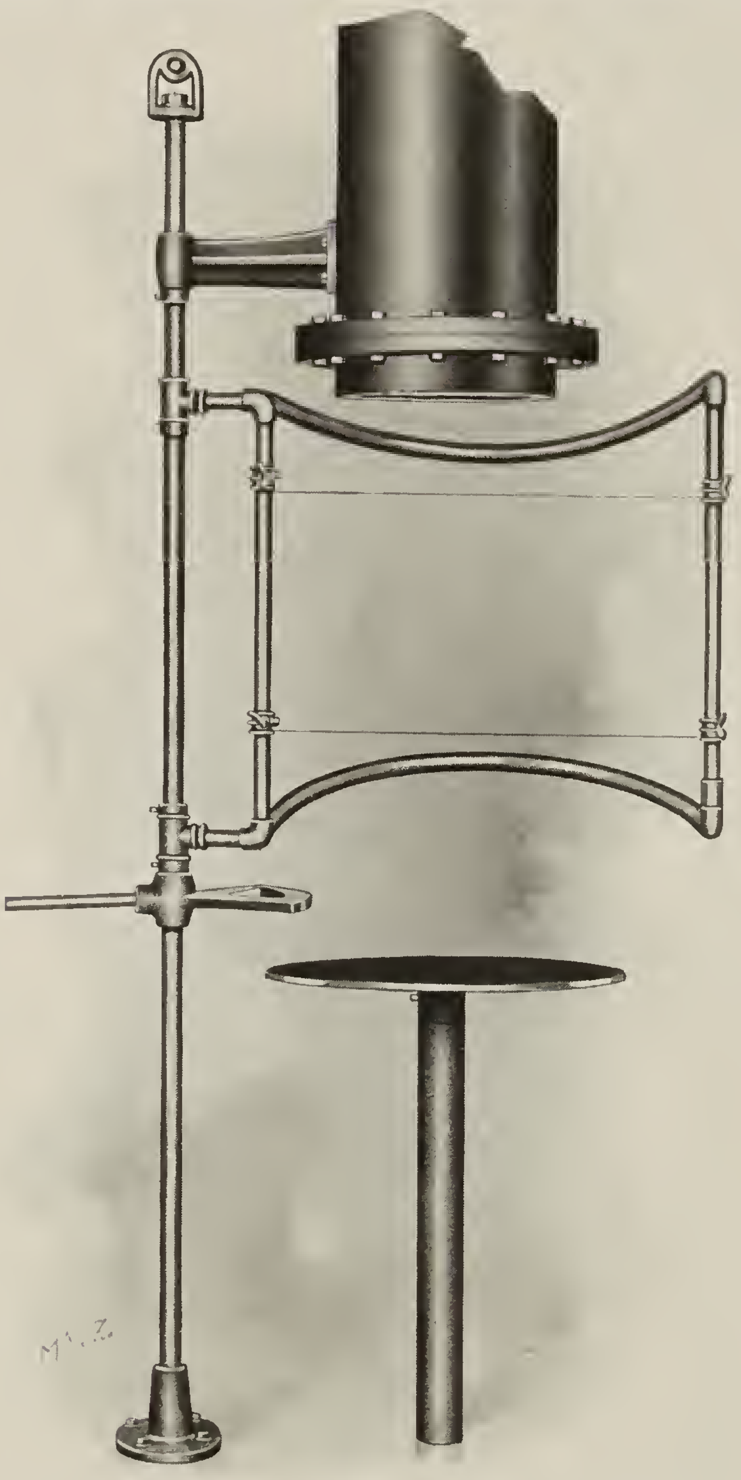
For cutting the horizontal column of clay we furnish a semi-automatic cutter of suitable design for the class or kind of ware being produced. Brick or hollow blocks may be cut on the same table. Small drain tile may be cut either on an automatic table or on a hand-power cutter. The operator starts the steam press and forces the column of clay through the die and out onto the cutting table until it reaches the end of the platens, he then stops the press and trips the clutch on the semi-automatic cutter. This puts the cutter in motion and cuts the brick. The cutter automatically stops when the cut is completed. The operator then starts the press and the column of clay issuing from the die forces the brick over the cutter and off onto the off-bearing belt. From the off-bearing belt the brick are taken by hand and placed on dryer cars or they may be repressed directly from the off-bearing belt.

The quality of the ware produced on the steam press is excellent. The capacity of the press is, of course, governed by the nature and character of the clay and the size and kind of ware being produced and by management. A steam press equipped with a 22-inch clay cylinder may be operated at a capacity of from 4,000 to 6,000 brick per hour or other clay products in proportion.


THE AMERICAN CLAY MACHINERY CO. BUCYRUS OHIO
THE AMERICAN CLAY MACHINERY CO. BUCYRUS O. U.S.A.

American 44-inch Steam Sewer Pipe Press, with Goose-Neck and Semi-Automatic Cutter for Making Brick

American Balanced Bow Drain Tile Cutter

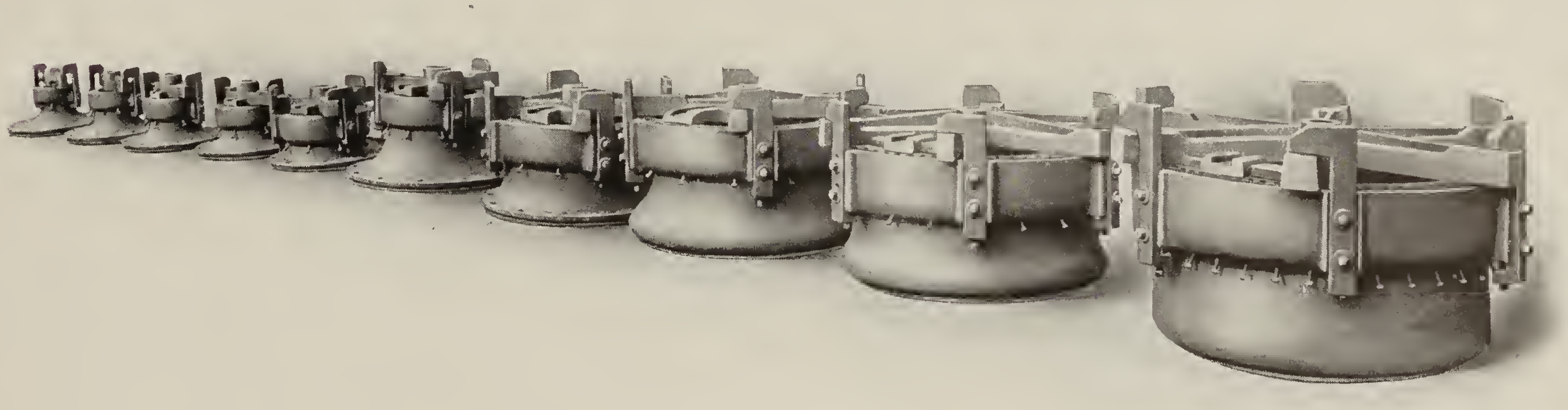


Balanced Bow Drain Tile Cutter, for Sewer Pipe Press

OUR Balanced Bow Cutter has been especially designed for cutting drain tile, hollow block, conduits and hollow fire-proofing. For this class of hollow ware this cutter will be found neat, strong, light and serviceable. It is well designed, strong, and works free and easy, making a clean cut. This cutting table can be attached to our 44″ sewer pipe press. It is designed with a substantial vertical turned shaft, passing through a bracket guide which is bolted to the side of the clay cylinder of the press and through a guide casting secured to the floor. To the upper end is attached a chain or cable which passes over grooved rollers and to which weights are attached sufficient to balance the cutter. The wire frame is made of pipe and two sets of wire fasteners are provided. The wire frame is mounted loose on the vertical rod, so as to swing on same in cutting the ware. The gauge is also mounted on the vertical shaft to gauge the length of the ware. The shaft and cutter frame can be raised and lowered at will and are easy to handle.

Sewer Pipe Dies

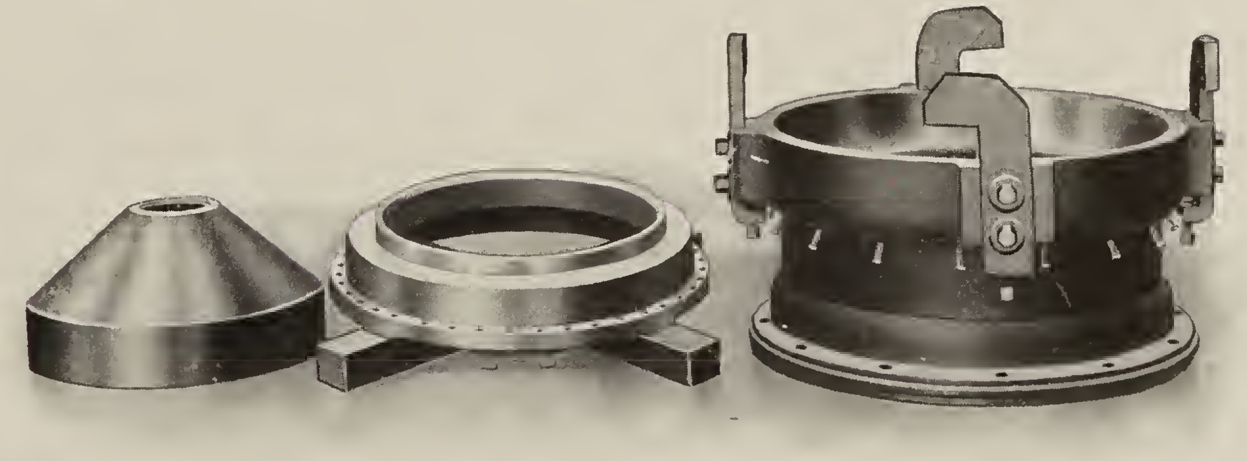
WE give the construction of our sewer pipe dies a great deal of thought, proportioning them so as to give the least trouble possible and to form the pipe with the least waste of time and material. We also take the clay we have to work with into consideration and as nearly as possible shape the dies to suit this material. We spare no time or expense in machining our dies, to get as near as possible perfect working surfaces for the clay to slide on, which is necessary for good working dies. We study the strength necessary and distribute the material and give sufficient weight to insure a high factor of safety and prevent annoying and expensive breaks. Pipe spalling, cracking and warping can often be overcome by designing the dies to overcome the defects.



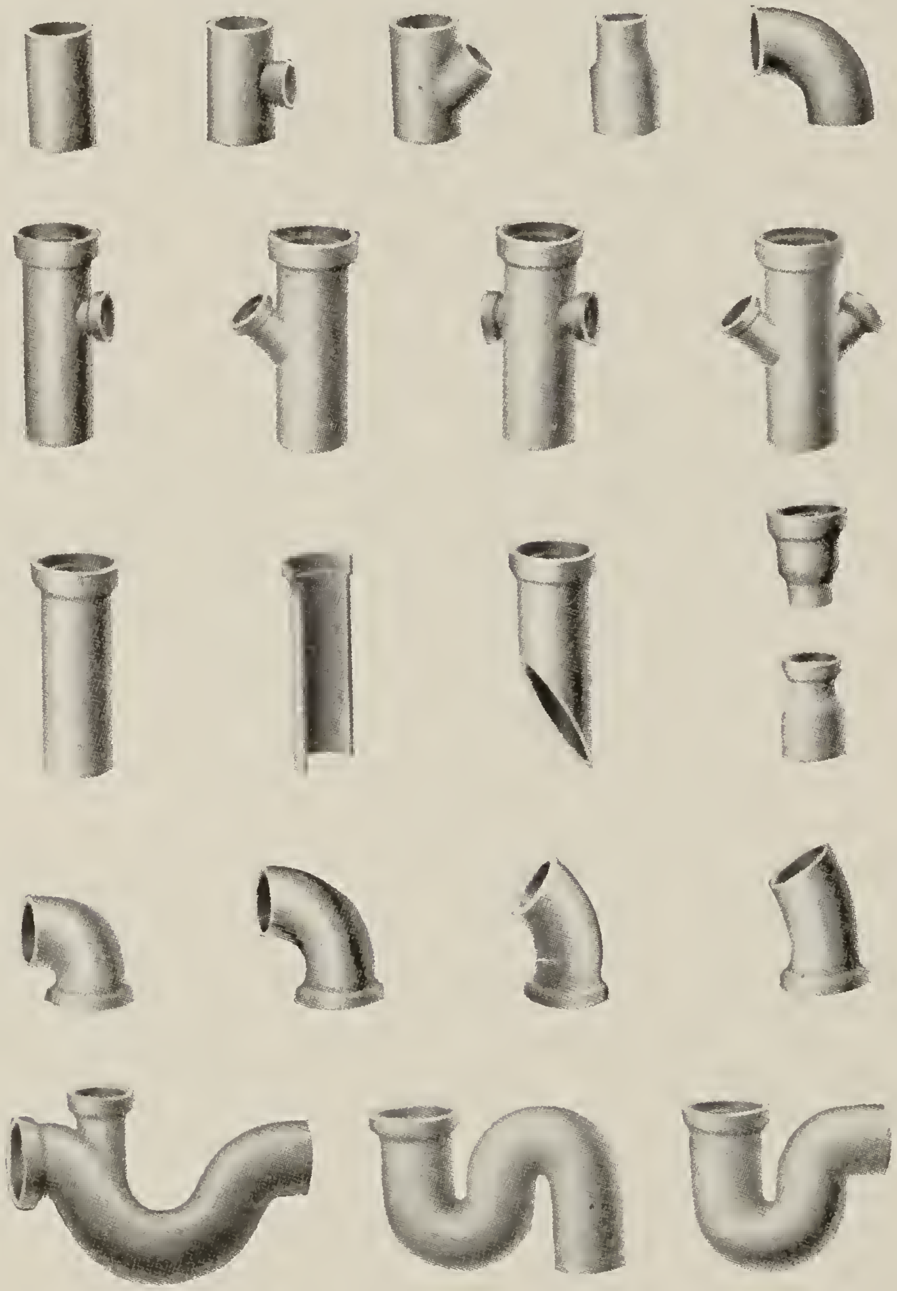
Set of Sewer Pipe Dies

Sewer Pipe Dies

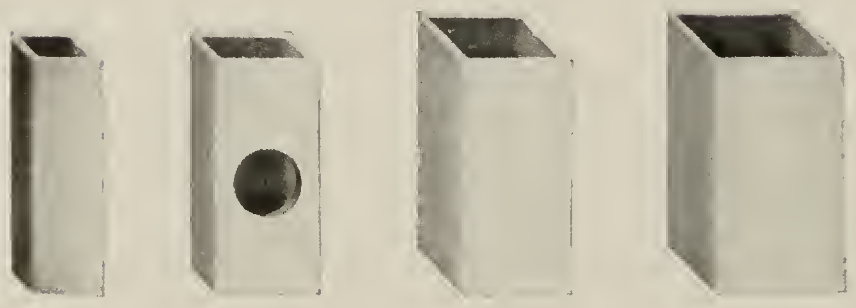
We make Sewer Pipe Dies to order. The accompanying cuts show the various parts of one of our pipe dies.



Standard Sewer Pipe Shapes



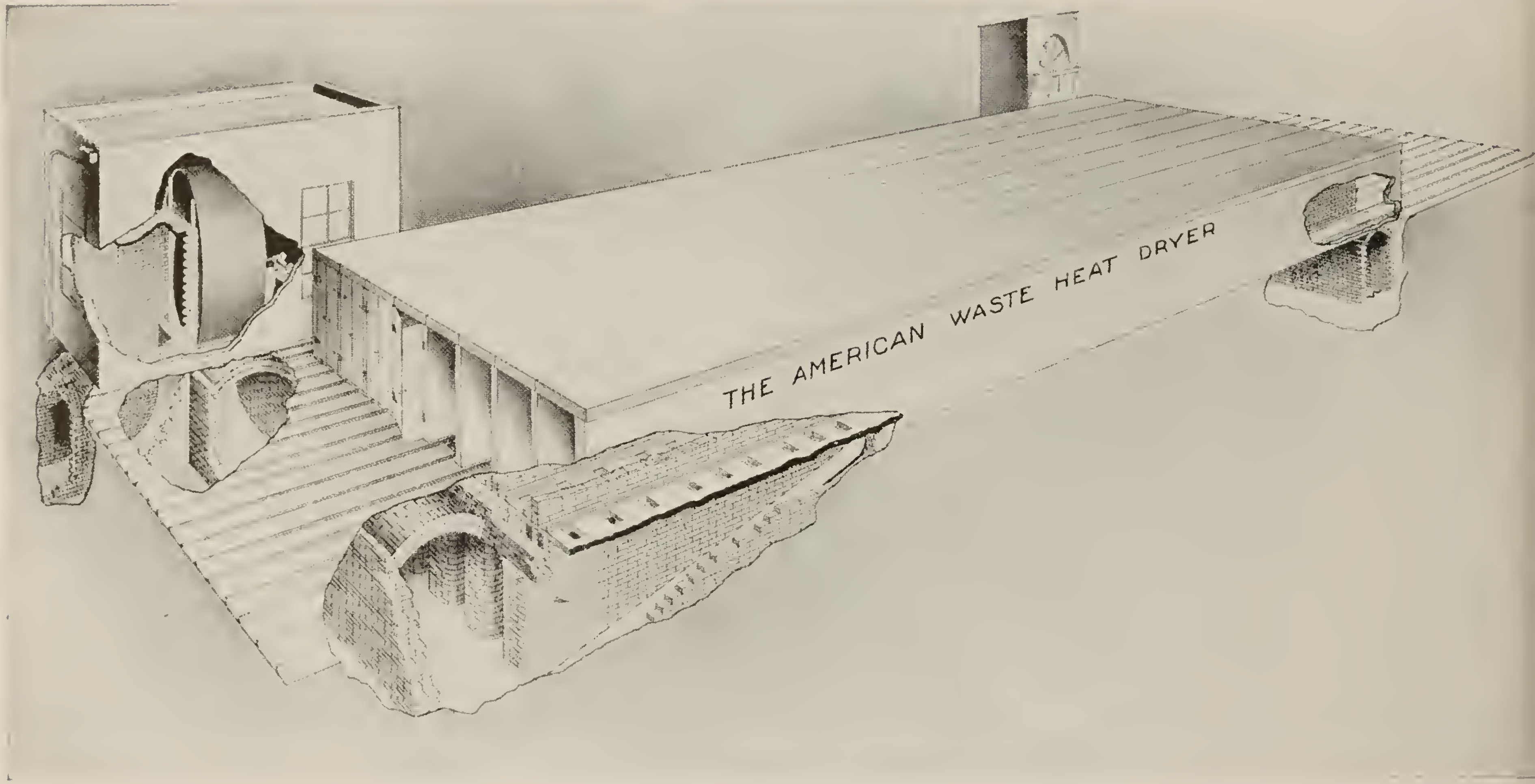
Flue Linings



WARCO
BUCYRUS
OHIO

Dryer Department

Successful Drying of Clay Products



American Waste Heat Dryer

THE wide variation in clays, and the necessity for different treatment in different cases, has led to our making a specialty of our Dryer Department. This department is in the hands of competent specialists who have mastered the various problems of successful drying. To meet every requirement found in clays we build various types of dryers, in order that the customer may be assured of the best dryer for his particular clay without any prejudice. Each dryer equipment is built complete in our factory, no matter whether the type of dryer is hot air, waste heat, steam, furnace or carless dryer. Making, as we do, every part of each equipment, we are able to be sure of the excellent quality of each part and can include the entire equipment in one shipment. If you are in need of a dryer, or if you contemplate changes in your present drying system, we shall be pleased to hear from you.

In writing us about drying problems correspondents should remember to state the class of machine used, whether soft mud, stiff mud or dry press; the nature of the clay, whether fire clay, shale clay, porous clay or plastic clay; the kind of product to be manufactured, and quantity to be dried daily. Give the size of the product to be dried, and if possible the amount of water it contains; also, whether it cracks easily when subject to the sun or wind. Information on these points will enable us to give you an accurate estimate and a full and satisfactory answer.

DRYER PLANS

We furnish the general drawings for the building of American Dryers and setting plans for the installation of the equipment.

ERECTING ENGINEER

We are prepared to furnish a competent man to superintend the building of the dryer and installation of the equipment. Nominal charge is made for his services.

AMERICAN WASTE HEAT DRYER

The waste heat dryer is the most economical drying system, as it utilizes the waste product in the shape of waste heat from the cooling kilns, therefore no additional fuel is necessary for heating the dryer. There is also an additional saving due to the fact that the kilns are cooled more rapidly, thereby saving from 24 to 48 hours in the time required to cool and empty the kilns.

The two important factors in drying clay products are heat and circulation of air, one being as important as the other. In the American Waste Heat Dryer both factors are amply provided for.

The waste heat dryer may be used successfully with a battery of down-draft kilns of either the round or square type and is also used most successfully in connection with the American Haigh Continuous Kiln.

The dryer is constructed entirely of brick and concrete and is therefore strictly fire-proof as well as being a permanent installation. The dryer consists of a number of tunnels. The standard length is 110′. The width and height of the tunnel is regulated according to the size and design of the car used for handling the ware.

At the side of the dryer and located at the discharge end of the tunnel a large fan is installed. This fan is connected with underground flues to the different kilns on the plant and arranged to draw the hot air from the kilns through the fan and discharge it into a main heat duct, which is underground and directly across in front of the tunnels. Branching off from the main heat duct are smaller ducts underneath each tunnel. These ducts extend 25 feet under the tunnel and are covered the entire length with the exception of a series of small openings through which the heated air enters the tunnel. At the upper end of the tunnel a cross-duct is built under the floor and connected to a smaller fan for the purpose of drawing off the damp atmosphere which is forced to the upper end of the tunnel by the large fan at the lower end. A suitable opening is left in the floor at the upper end of each tunnel to permit the damp atmosphere to reach the small fan. These openings are closed with dampers for the purpose of regulating the flow of air from the tunnel.

OPERATION

The tunnels are built on an incline or grade equal to 1″ in every 7′ so that the upper end or receiving end of the tunnel is 15″ higher than the lower end or discharge end of the tunnel. It is essential that the dryer be built with a grade in order that the train of cars in the tunnel may be moved readily.

In the operation of the dryer it is essential that the tunnels be always kept full of cars loaded with brick, otherwise the efficiency of the dryer is very materially affected. When a carload of dry brick is taken from the discharge end of the tunnel the entire train of cars will move down the tunnel, leaving a space at the upper end of the tunnel to receive a carload of green brick. The green brick entering the receiving end of the dryer come in contact with the warm, moist atmosphere and are gradually heated. As the car makes progress down through the tunnel the temperature increases and the drying of the ware progresses. The temperature of the air in the tunnel at the discharge end is usually about 250 degrees Fahr. and the temperature of the air at the receiving end of the tunnel is about 125 degrees Fahr.

Each tunnel is entirely separate from its neighbor and may be operated independently. Any tunnel in the dryer may be shut off and put out of operation whenever required. Additional tunnels may be added to the dryer to increase the capacity without affecting the operation of the tunnels previously installed.

Years of experience in building and operating dryers have proven that the most efficient method of operating a dryer is as follows:

The dryer tunnel should be of sufficient length to hold fifteen cars. Storage tracks should be provided at each end of the dryer of sufficient length to hold five cars for each tunnel.

In the operation of the plant, when the plant shuts down at night, the dryer tunnels should be all full of cars, and there should be five cars of green brick on the storage tracks at the receiving end of each tunnel. At twelve o'clock at night, five cars of dried brick should be drawn out at the discharge end of the tunnel and five cars on the storage track, at the receiving end of the tunnel, should be run into the dryer.

When the plant starts in the morning, there will be five cars of dried brick on each track at the discharge end of the dryer. During the forenoon, the setting gang will empty the storage tracks at the discharge end and the machine gang will fill the storage tracks at the receiving end of the dryer.

At noon five cars will be drawn from the discharge end and five cars will be run into the dryer at the upper end. In this manner the dryer will be opened twice in twenty-four hours—at noon and at midnight, and the drying capacity of the dryer will be equal to ten cars per tunnel every twenty-four hours.

In drying tender clay, the tunnels should be of sufficient length to hold twenty cars, with storage tracks for five cars at each end, the operation being in the same order to obtain the same drying capacity.

EQUIPMENT

Exhausters

For handling the waste heat from the kilns and forcing it into the dryer we use an American Multiple Blade Fan with 7/8 steel housing. The size of this fan is determined by the number of tunnels to be operated, the character of the clay to be dried and the kind of ware to be produced. The fan may be arranged for belt drive, either from an engine or motor, or arranged for a direct-connected motor. The speed of the fan regulates the supply of air entering the tunnel and this may be varied to suit requirements and conditions.

At the upper end of the tunnel a small fan is installed for the purpose of drawing off the damp atmosphere from the drying ware. The method of driving this fan may be belt drive, engine driven or motor driven and the speed regulated according to requirements.

Suction Damper

In connection with the large fan, a mixing chamber is installed through which the hot air from the kilns passes to reach the fan and in the mixing chamber is installed a suction damper for the purpose of regulating the supply of cold air to the fan in order to reduce the temperature of the waste heat before it reaches the dryer. The supply of cold air is under perfect regulation at all times.

Heat Duct Dampers

A steel damper is installed in the heat duct underneath each tunnel for the purpose of regulating the supply of air to each tunnel, making it possible to insure an equal supply of air to the various tunnels in the dryer, the arrangement being such as to permit closing off a tunnel entirely if it is desired to put the tunnel out of operation.

Vent Dampers

In the upper end of the tunnel a steel vent damper is installed in the opening in the floor connecting to the vent duct leading to the exhaust fan. These vent dampers are arranged to regulate the flow of air from the tunnel.

Tunnel Doors

At the lower end or discharge end of the tunnel, we use steel doors mounted on a steel frame which is anchored to the end of the tunnel walls. This construction is substantial and permanent. At the upper end or receiving end of the tunnel, we advise the use of wooden doors, as experience has shown that steel doors rust out rapidly, due to the excessive amount of moisture in the upper end of the tunnels. The wooden doors, however, should be mounted on a steel frame anchored to the end of the tunnel walls.

Tracks In Tunnels

The tracks in the tunnels should be made of steel rails not less than 16 pounds per yard. These tracks are secured to cross-ties, which are usually made of 16-lb. steel rails. Cast iron rail clamps are used for securing the steel rails to the cross-ties. With the track properly installed there should be no trouble whatsoever in operating the cars through the dryer as the tracks are always in perfect line and proper gauge.

Dryer Cars

For drying brick or paving blocks it is customary to use either a single-deck or double-deck dryer car. These cars may be furnished with steel decks or may be equipped with wooden decks. For drying fire-proofing, hollow building brick, or drain tile either double or triple-deck dryer cars can be used, equipped with either steel decks or wooden decks. For drying soft mud brick a rack car is used, arranged for using either steel or wooden pallets. We build a standard line of dryer cars and are prepared to furnish special cars when necessary to meet some special requirement or condition.

Transfer Cars and Turntables

We build a standard line of transfer cars and turntables suitable for use in connection with our dryers. The transfer cars are built for either single or double track and for large plants we are building triple transfer cars, which are usually motor driven.

Auxiliary Furnace

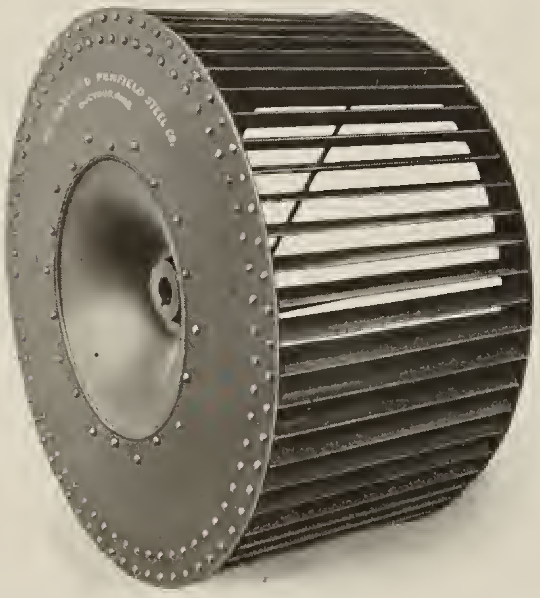
In connection with the waste heat dryer it is sometimes advantageous to install an auxiliary furnace located near the large fan. This furnace is used for the purpose of heating up the dryer when starting and is only used while no waste heat is available from the kiln. We furnish complete equipment of iron work for the auxiliary furnace with plans for installation.

American Steam Blower Dryer

THE American Steam Blower Dryer is installed and equipped practically the same as a waste heat dryer and is recommended on plants where no waste heat is available for drying the ware. With this dryer a steam coil heater encased with a steel jacket is installed in connection with a large fan for the purpose of heating the air to be supplied to the tunnels. In connection with the steam coil heater we use the low pressure vacuum system for circulating the steam, making it possible to use exhaust steam when available during the day and live steam at a low pressure during the night. We supply the vacuum traps and vacuum pump necessary for drawing off the condensation and returning the hot water to the boilers. Steam pipe connections from the boiler to the heater and from the pump back to the boiler are not furnished except under special arrangement.

Equipment

The equipment for the steam blower dryer, consisting of cars, dampers, tracks, transfer cars, etc., is the same as it would be for a waste heat dryer and the operation of the dryer is practically the same.



American Multiple Blade Fan Wheel

Bucyrus Steam Tunnel Dryers

The Bucyrus Steam Tunnel Dryer is one of the oldest dryers in use and has been in successful operation many years. This type of dryer was in use long before the waste heat or blower dryer was invented.

The dryer consists of a series of tunnels 75′ long. The height and width of the tunnels is regulated according to the size and design of the cars used in drying the product. Each tunnel is equipped with a series of steam pipes connected at each end by suitable manifolds and headers and provided with independent valves, so that the tunnels may be operated independently if desired.

There are seven lines of one-inch steam pipe attached to the tunnel walls on each side of the tunnel and sixteen lines of one-inch pipe on the floor of the dryer between the track rails and underneath the cars.

The dryer is operated under the low pressure vacuum system, so arranged that exhaust steam may be used when available during the day time and live steam at low pressure is used at night. The necessary vacuum traps and vacuum pump are furnished with the equipment. Steam connections from the boiler to the dryer and hot water connections from the pump back to the boiler are not furnished except under special arrangement.

The circulation of air in the Bucyrus Steam Tunnel Dryer is up and down instead of longitudinally as in other types of dryers where the air enters at one end of the tunnel and passes out at the opposite end. At proper intervals in the tunnel walls are placed a series of warm air ducts for conveying the warm air from the space above the dryer and underneath the shed roof where the air is warm and free from moisture at all times. These ducts are arranged so as to discharge the air directly underneath the steam pipes located between the rails and underneath the cars. The air coming in contact with the hot pipes becomes more highly heated and rises up through and between the bricks on the cars, gathering moisture from them in its ascent. It then passes out through vapor stacks, located in the roof of the tunnels above the cars. As the moisture-ladened air travels only a few feet and passes directly into the open air, there is no tendency for the moisture to settle on the brick. Each vapor stack is equipped with a damper for regulating the draft and controlling the circulation of air among the brick, insuring uniform drying on all parts of the car.

The dryer is constructed entirely of brick and concrete and is therefore fireproof and durable. The equipment of cars, etc., for this type of dryer is similar to any other type of tunnel dryer.

Detailed plans showing the construction of the dryer are furnished with each equipment.

Bucyrus Steam Tunnel Tender Clay Dryer

The Tender Clay Dryer is similar in construction to the standard Bucyrus Steam Tunnel Dryer. The tunnels, however, are 105 feet long. The standard pipe equipment for the 75′ tunnel is furnished and the upper end of the tunnel, 30′, is equipped with six lines of pipe for the purpose of maintaining a low temperature in the upper end of the tunnel. By this method we find that tender clay may be dried successfully, as the brick are warmed slowly in the upper end of the dryer before passing down to the point where they receive a higher temperature. Clays which are very difficult to dry in the open air without checking or cracking have been successfully dried in this type of tender clay dryer.

The general construction of the dryer and the equipment of cars, etc., is similar to the Standard Bucyrus Steam Tunnel Dryer.

Furnace Dryer

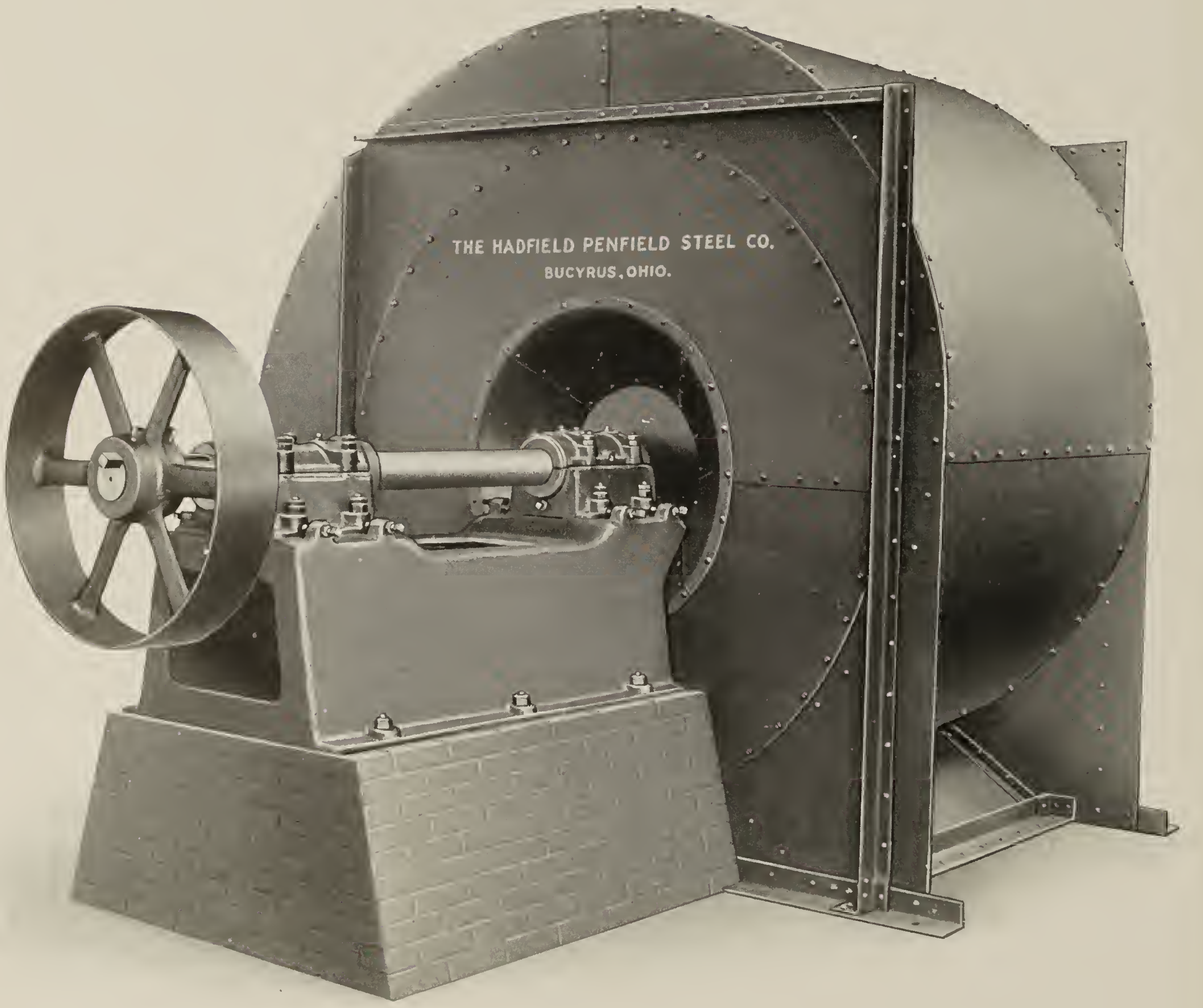
The Furnace Dryer or Radiated Heat Dryer is the oldest type of dryer in use for the drying of clay products. This type of dryer was used before the steam heated dryers were invented. The dryer consists of a series of tunnels, each having its own furnace for generating the heat and having its own flue connection to the stack for carrying off the products of combustion.

The furnaces are located below the floor of the dryer and the track from the tunnel passes directly over the furnace. The smoke flue connecting the furnace to the stack passes underneath the tunnel and the covering of the smoke flue forms the floor of the tunnel, the heat radiating through the floor.

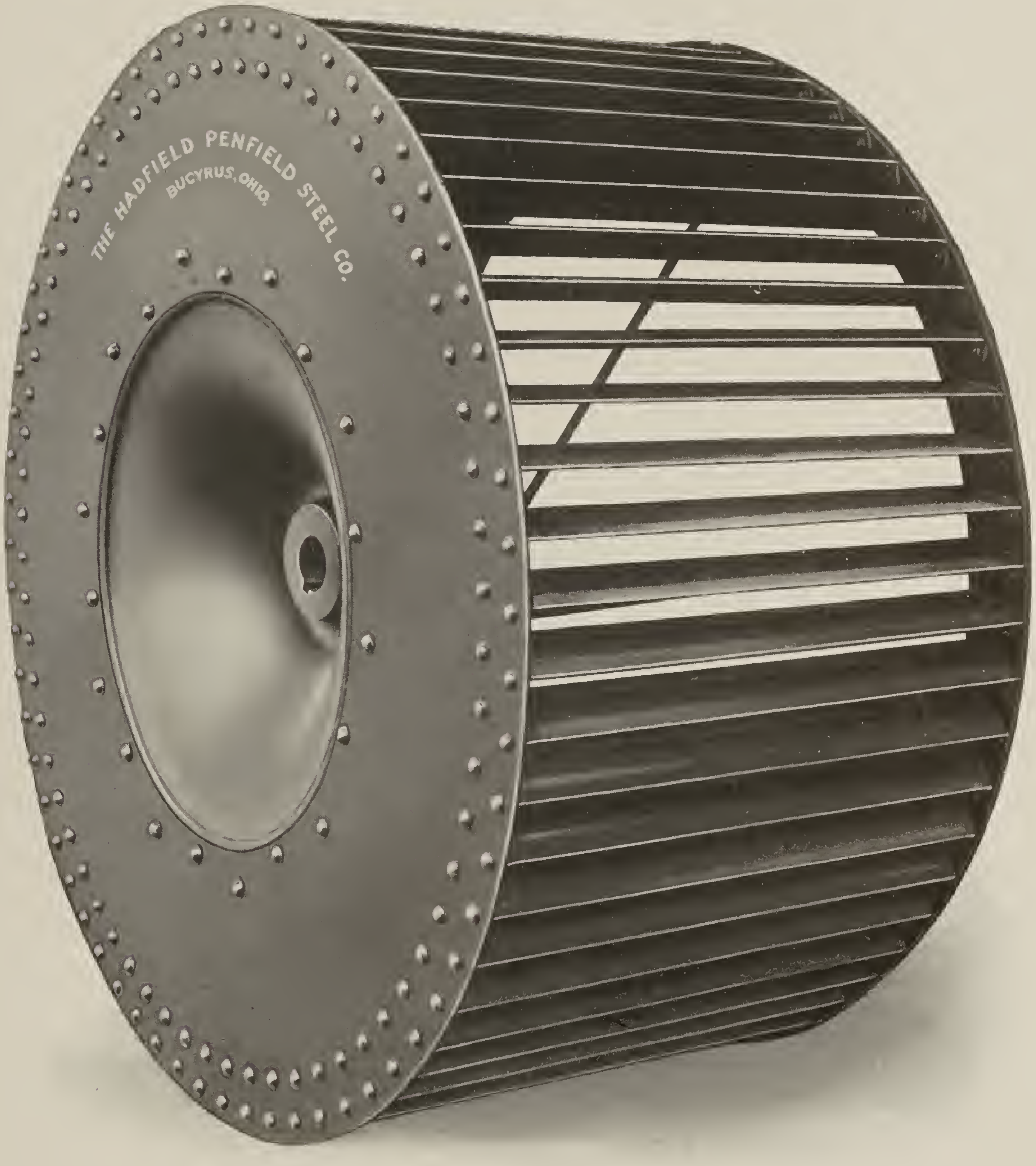
At the upper end of the dryer a brick stack is erected, so arranged that the smoke from the furnaces and the vapor from the drying brick in the tunnels is carried off in the same stack. The floor of the tunnel is tight and no gas or smoke from the furnace enters the tunnels. The dryer is constructed of brick and concrete and is a permanent and lasting installation. Many dryers of this type have been in constant use for more than thirty years.

The tunnels are 110 feet long and the width and height of the tunnel is built in accordance with the size and kind of car used. We supply all of the structural iron work for the erection of the dryer and also the necessary equipment of cars, etc., for operating.

Complete plans and specifications are furnished with each shipment.



American Multiple Blade Fan with Steel Housing and Water-Cooled Bearing with Pulley for Belt Drive

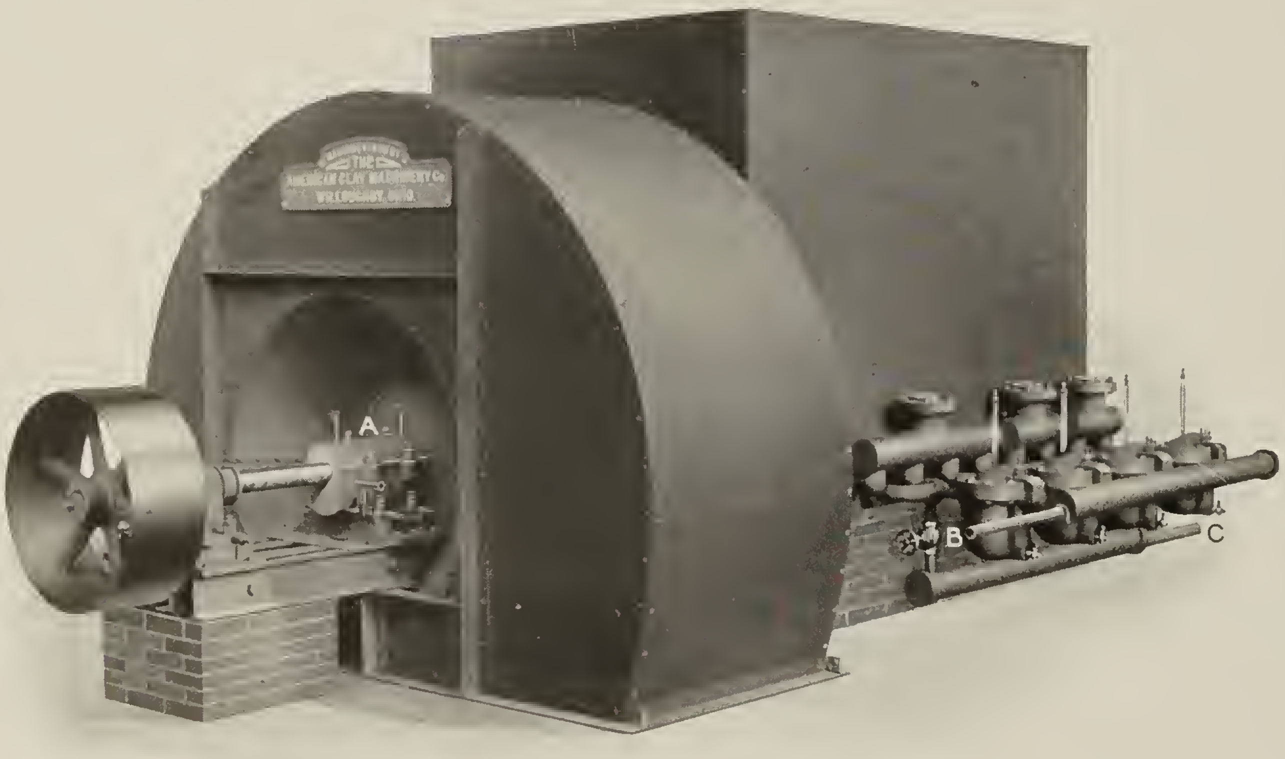


American Multiple Blade Fan Wheel

American Steam Coil Heater for Use With Fans

OUR improved Sectional Heaters are built of 1″ pipes and furnished complete with sheet steel casing. (Furnished knocked down.) These heaters consist of a number of coils enclosed in a sheet steel casing. These coils are constructed upon cast iron bases, so divided by diaphragms that a positive circulation of steam is insured. All of the pipes are exactly the same length. They are screwed into the base, and the upper end of each pair is connected with a return bend. All pipes being vertical, it is impossible for water to remain in them.

This type of heater is especially adapted to be used with a Blower Dryer. Size of heater is governed by the size of the fan.



American Fan and Steam Coil Heater

Steam Traps and Steam Pumps

Suitable steam traps and steam pumps may be furnished with each Steam Coil Heater. The size and number of traps and size of pump is governed by the size of the heater.

Pipe connections from the boiler to the heater, the heater to the trap, the trap to the pump, and from the pump to the boiler, are not included unless specified.

Dryer Equipment

American Suction Damper

The suction damper is used for regulating the admission of cold air into the mixing chamber, in order to reduce the temperature of the waste heat coming from the cooling kilns before entering the fan, thus regulating the temperature of the air passing into the tunnels. The construction of the damper is suitable throughout. It is made with a heavy steel frame arranged to be built into the brick wall forming the mixing chamber. The damper is so constructed that it may be opened to any degree required and locked into position. In this way the amount of air passing through the damper can be regulated very closely.

American Steel Tunnel Doors

We recommend the use of American Steel Tunnel Doors and Steel Frame for mounting same for the hot end or discharge end of the dryer.

For the cool end or receiving end of the dryer we recommend the use of a steel frame for hanging wooden tunnel doors.

American No. 541 Universal Rail Clamp

The rail clamp is used to secure the track rails in the tunnels. 16-lb. rails should be used for the tracks and either a 16-lb. rail or a small I-beam should be used for the cross-ties in the tunnel. 20-lb. rail or larger size should be used for all transfer tracks.

American Sheet Steel Vent Dampers

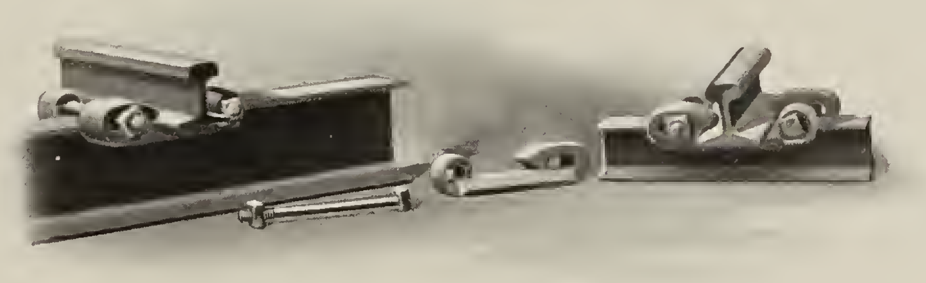
Vent dampers are furnished complete with guides. They are located in the floor of the tunnel at the receiving end and used to regulate the escape of moisture or vapor from the tunnel into the vent duct.

American Sheet Steel Heat Duct Dampers

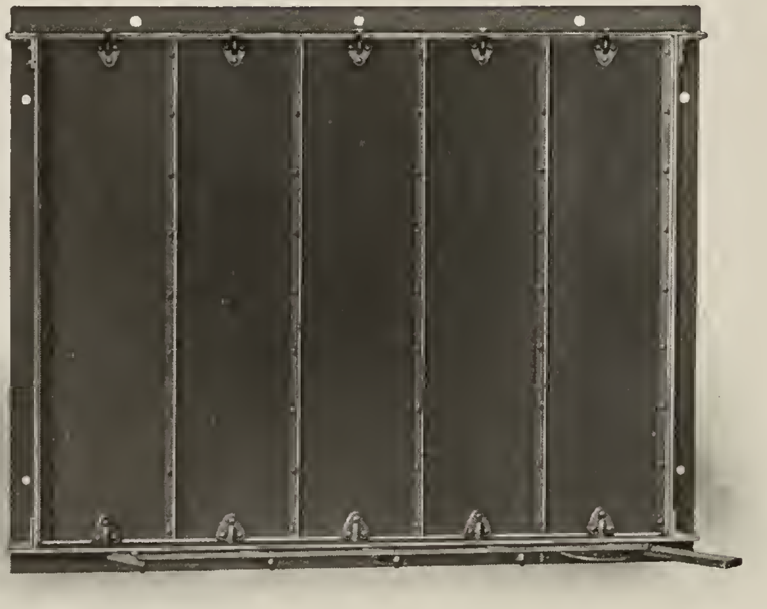
These dampers are to be installed in the heat duct under the floor of the tunnel at the hot end of the dryer and are used to regulate and control the flow of hot air from the waste heat duct into the tunnels.

American Goose Necks

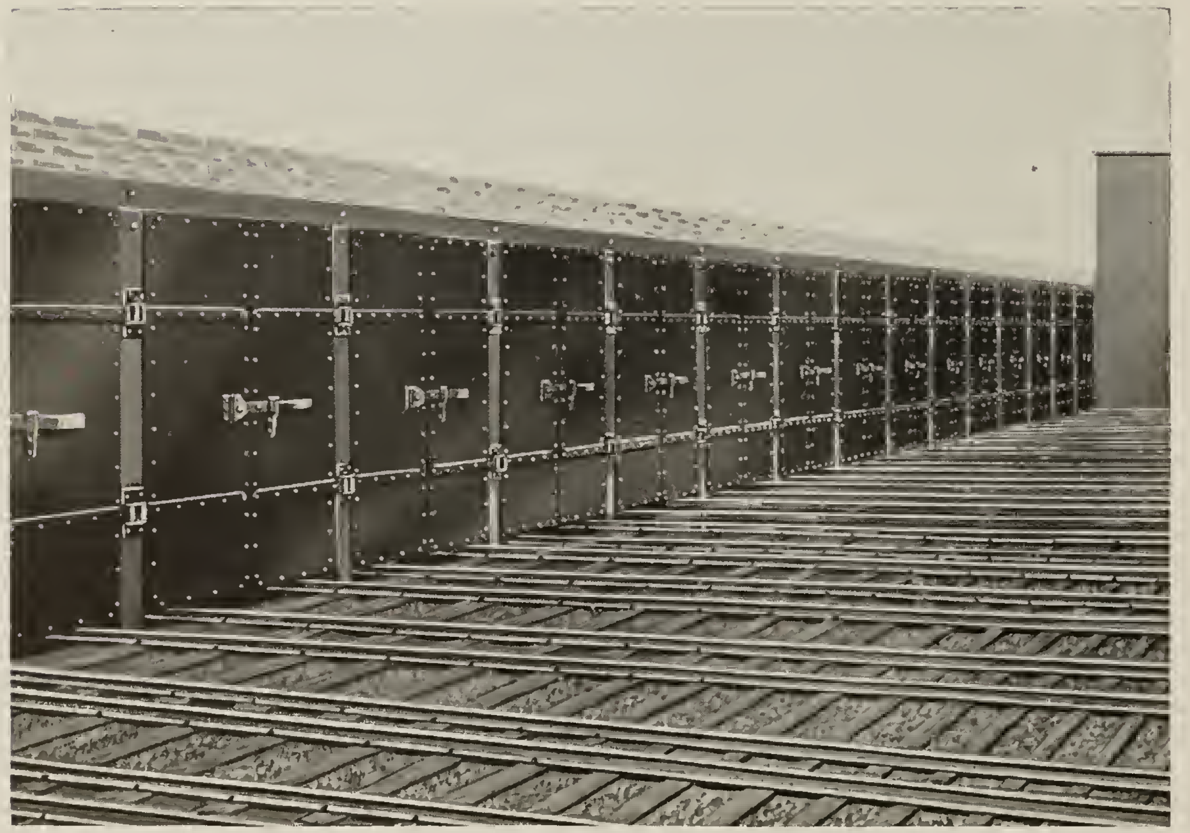
Sheet steel goose necks may be used for drawing the waste heat from the kiln when no underground connections are made to the kiln. Manhole covers are required for covering the manholes when goose necks are not in use.



American No. 541 Universal Rail Clamp



American Suction Damper



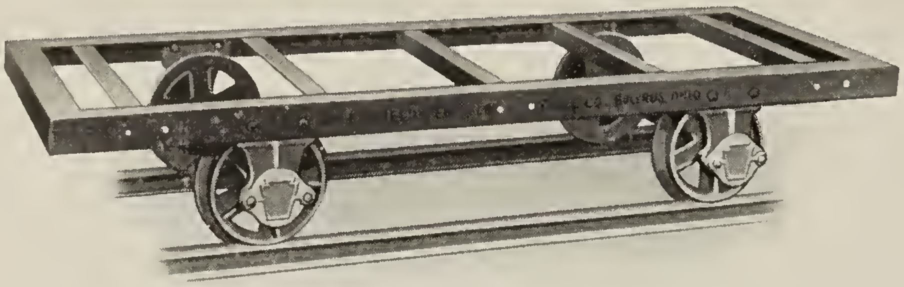
View Showing a Series of Swinging Sheet Steel Tunnel Doors. Complete with Hinges and Improved Relief Spring Latches. Mounted on Steel Dryer Front

WARCO
BUCYRUS
OHIO

Dryer Car Department

American Electric Welded Steel Dryer Cars

WE build a standard line of dryer cars suitable for handling various kinds of clay products, also single and double-track transfer cars, as well as turntables for use when local conditions require.



Single-Deck Electric Welded Dryer Car, Style No. 427, Weight 300 Lbs.

SINGLE-DECK CAR WITHOUT DECK—STYLE No. 427

Frame

The frame is made of one piece of 3″ x 2½″ x ¼″ steel angle bent true to size and shape around a form and electric welded, making a solid, rigid, one-piece frame perfectly square and true. Strong and substantial, it can not rack, work loose or get out of shape. Will stand hard usage and rough treatment. Frame is punched for upper deck supports.

Cross-Ties

Car is built with five cross-ties made of 2″ x 1½″ x ¼″ angles. These are electric welded to the frame

Bearings

Car is equipped with the Standard American self-aligning roller bearings.

Axles

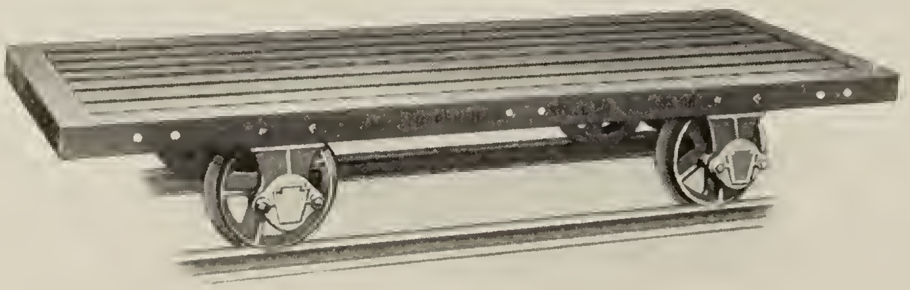
Axles are 1½″ diameter.

Wheels

Wheels are cast iron 10½″ diameter.

DIMENSIONS

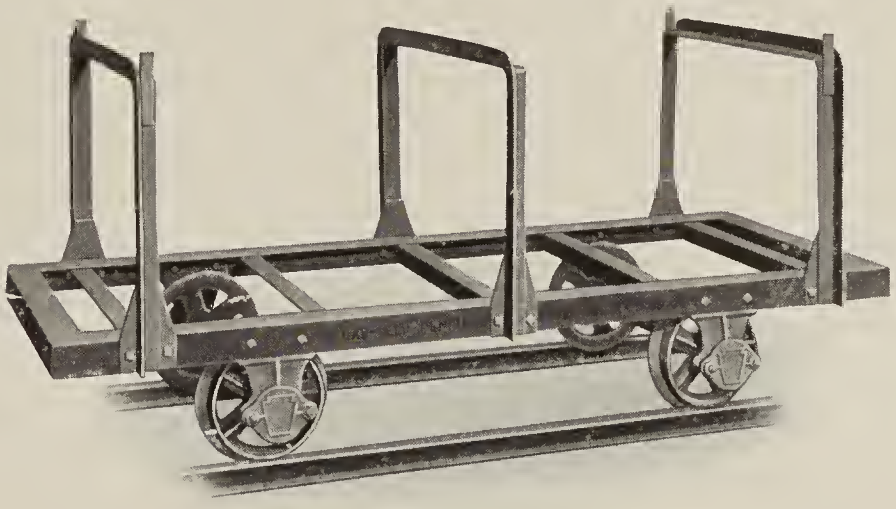
Length	7′
Width	3′
Track gauge	24″ to 30″
Height above track	12¾″



Single-Deck Electric Welded Dryer Car, Style No. 428, Weight 400 Lbs.

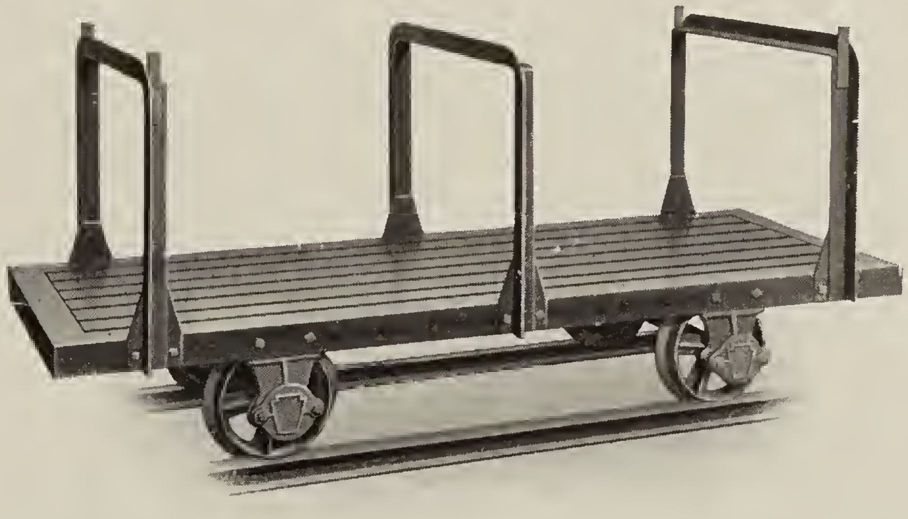
SINGLE-DECK Car with steel deck Style No. 428 is built exactly the same as the No. 427 single-deck car with the steel deck added. The deck is made of flat steel bars ¼″ thick, electric welded to the five cross-ties in the frame. Top of the deck is perfectly smooth and flush with the top of the side frame, no rivets used.

DOUBLE-DECK Car without decks Style No. 429 is built exactly the same as the No. 427 Single-Deck Car with the uprights or standards to support the upper deck added. These standards are made of 2″ x 1½″ x ¼″ angles with the gusset plates electric welded and are bolted to the frame. No rivets used.



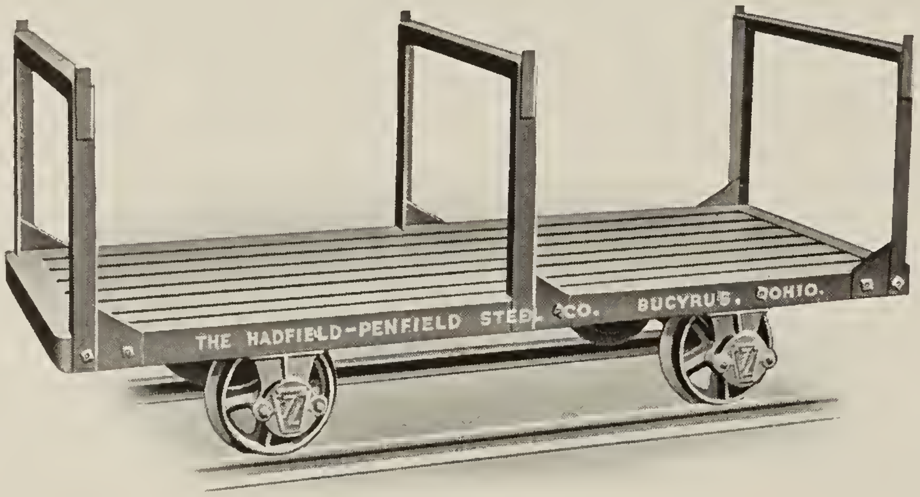
Double-Deck Electric Welded Dryer Car, Style No. 429, Weight 375 Lbs.

DOUBLE-DECK Car with one steel deck Style No. 430 is made the same as the No. 428 car with the uprights or standards to support the upper deck added. These standards are made of 2″x1½″x¼″ angles with the gusset plates electric welded and are bolted to the frame, no rivets used.



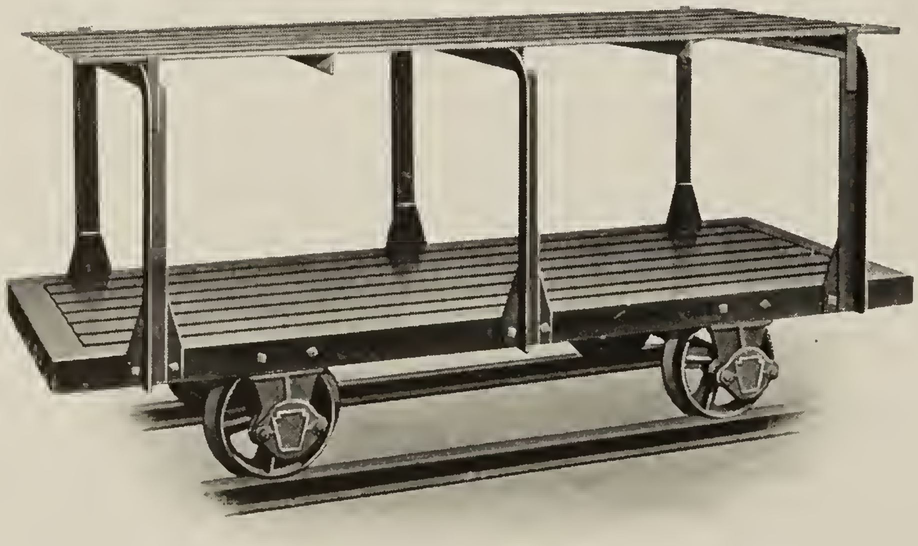
Double-Deck Electric Welded Dryer Car, Style No. 430, Weight 475 Lbs.

DOUBLE-DECK Car with one steel deck Style 430-B is made the same as the No. 430 car but with a different standard to support the upper deck. These standards are made of 2″x1½″x¼″ angles bent around a form and electric welded in the upper corners. This turns the flat side of the angle up so the upper deck rests on a surface 1½″ wide. At the lower end the angle is cut away so that one side rests on top of the car frame. Gusset plates are electric welded, no rivets used. Standards are set out to the end of the frame.



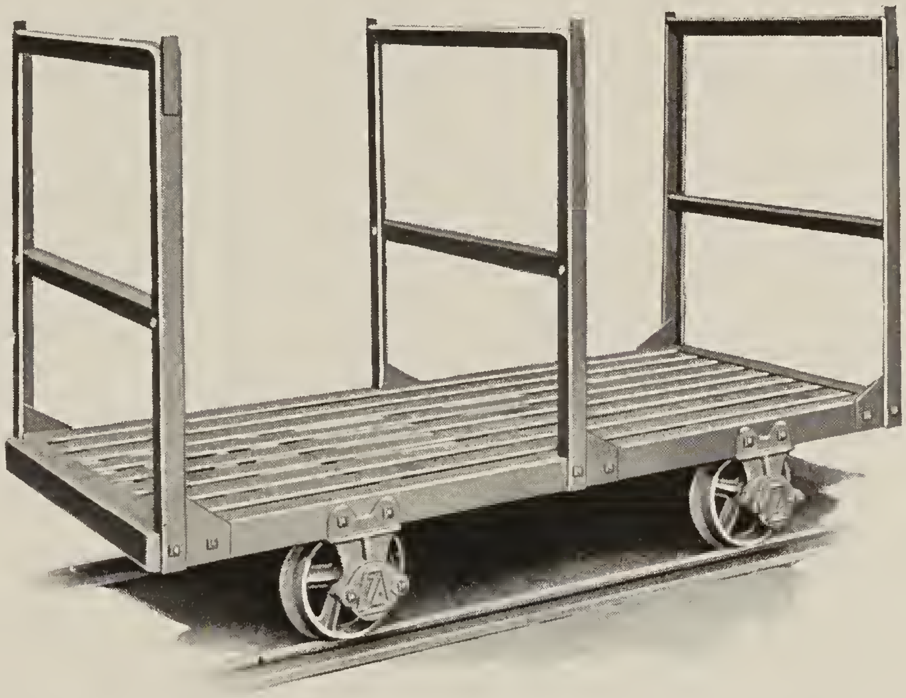
Double-Deck Electric Welded Car, Style No. 430-B, Weight 475 Lbs.

DOUBLE-DECK Car with both steel decks Style No. 431 is made the same as the No. 430 car with the upper steel deck added. This deck is made of flat steel bars, ¼″ thick, electric welded to five cross-ties made of 2″ x 1½″ x ¼″ angles, no rivets used. Length of upper deck 6′ 6″.



Double-Deck Electric Welded Dryer Car, Style 431, Weight 645 Lbs.

TRIPLE-DECK Car with one steel Deck Style No. 295 is built exactly the same as the No. 428 Single Deck Car with the uprights or standards to support the upper deck added. These standards are made of 2″ x 1½″ x ¼″ angles with the gusset plates electric welded and are bolted to the frame.

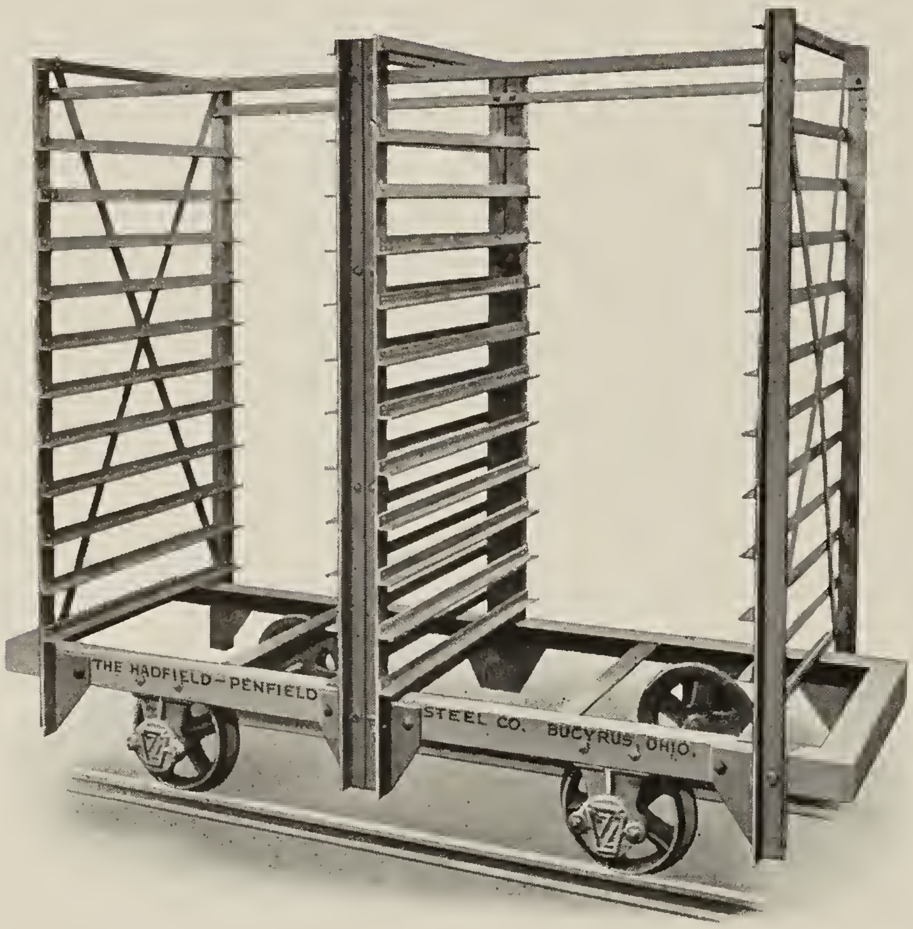


Triple-Deck Electric Welded Dryer Car with One Steel Deck, Style No. 295, Weight, 600 Lbs.

TRIPLE-DECK Cars are used for drying Hollow Block and Drain Tile. The spacing of the decks can be made to suit requirements according to the ware that is to be dried.

Style No. 295 Car is also furnished without the steel bottom deck or may be furnished complete with three steel decks when required.

American Rack or Pallet Car

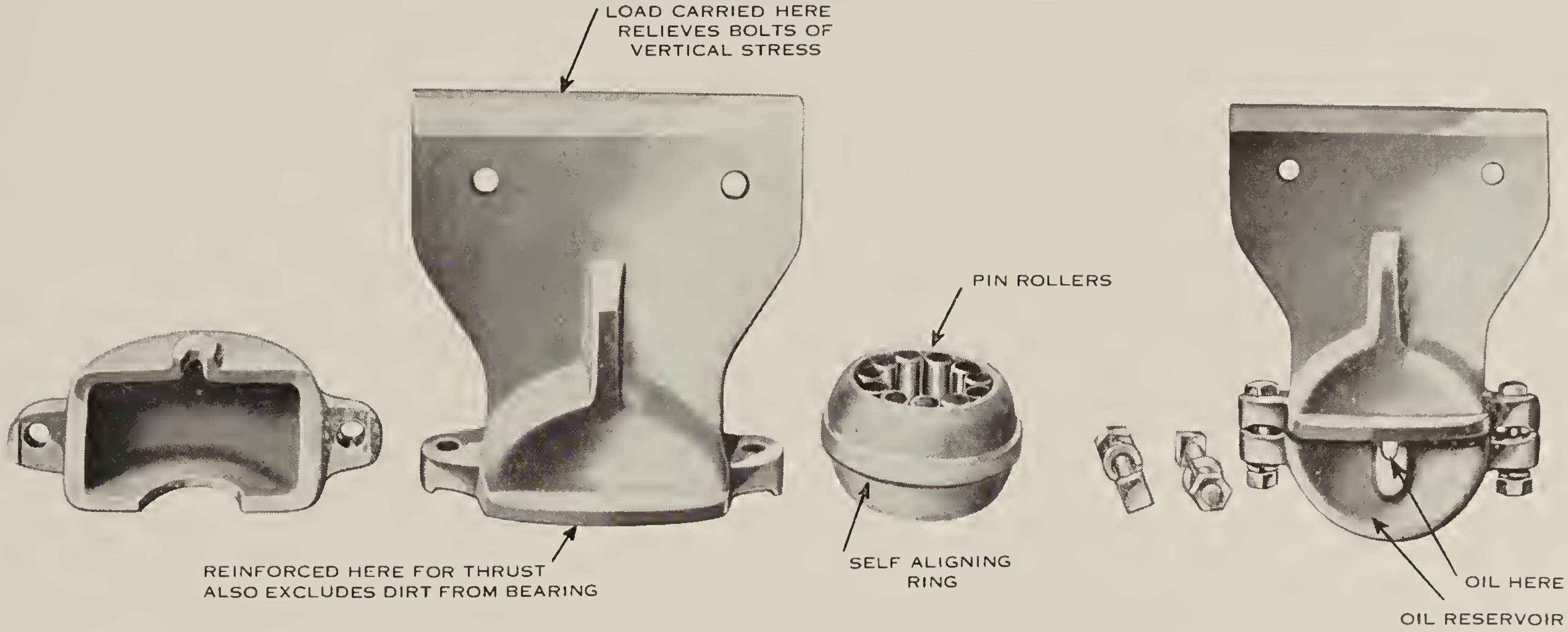


Rack or Pallet Car Style No. 434, Weight 640 Lbs.

RACK Cars are used when material is to be dried on pallets. Such cars are always built special to suit requirements and designed to use either wooden or steel pallets.

Rack Car No. 434 is made with a steel frame using one piece of 3″x2½″x¼″ angle bent around a form and electric welded. This makes a very strong and rigid frame. Uprights are made of 2″x1½″x¼″ angles. Shelves are 1¼″x1¼″x⅛″ angles. Standard spacing for shelves for soft mud brick is 4¾″ with 12 shelves and standard rack car will hold 72 Pallets 34″ x 10″ wheels. Axles and bearings are the same as used on all standard single or double deck cars.

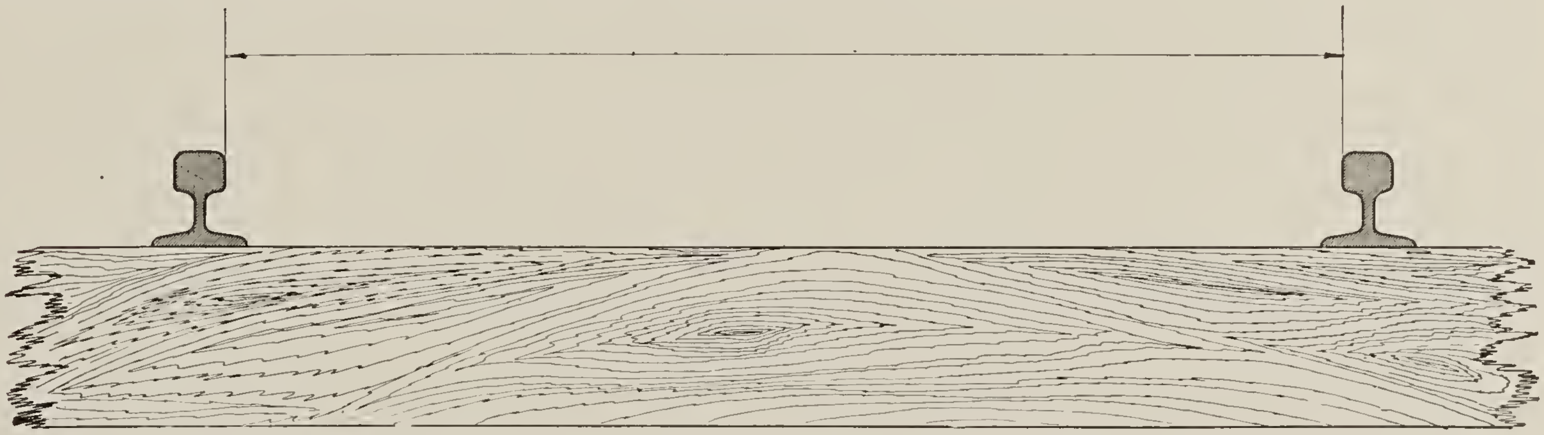
American Self-Aligning Bearing


LOAD CARRIED HERE RELIEVES BOLTS OF VERTICAL STRESS
PIN ROLLERS
REINFORCED HERE FOR THRUST ALSO EXCLUDES DIRT FROM BEARING
SELF ALIGNING RING
OIL HERE
OIL RESERVOIR

OUR bearings for dryer cars have been greatly improved in that they are stronger, retain oil, and will travel over an uneven track without binding the axle. The bearing housing bolts to the side rails of the car and bears on the underside of the top leg of the angle, carrying the load central under the side frame and over the bearings. It is split horizontally, forming an oil reservoir. Inside the housing is a self-aligning bearing ring, machined inside and spherical outside, which carries the pin rollers which bear on the axle.

Lubrication is supplied through an opening below the reinforcing rib, which also prevents falling particles of foreign matter entering the bearing through the oil passage.

The advantages of this bearing are greater durability and less friction.



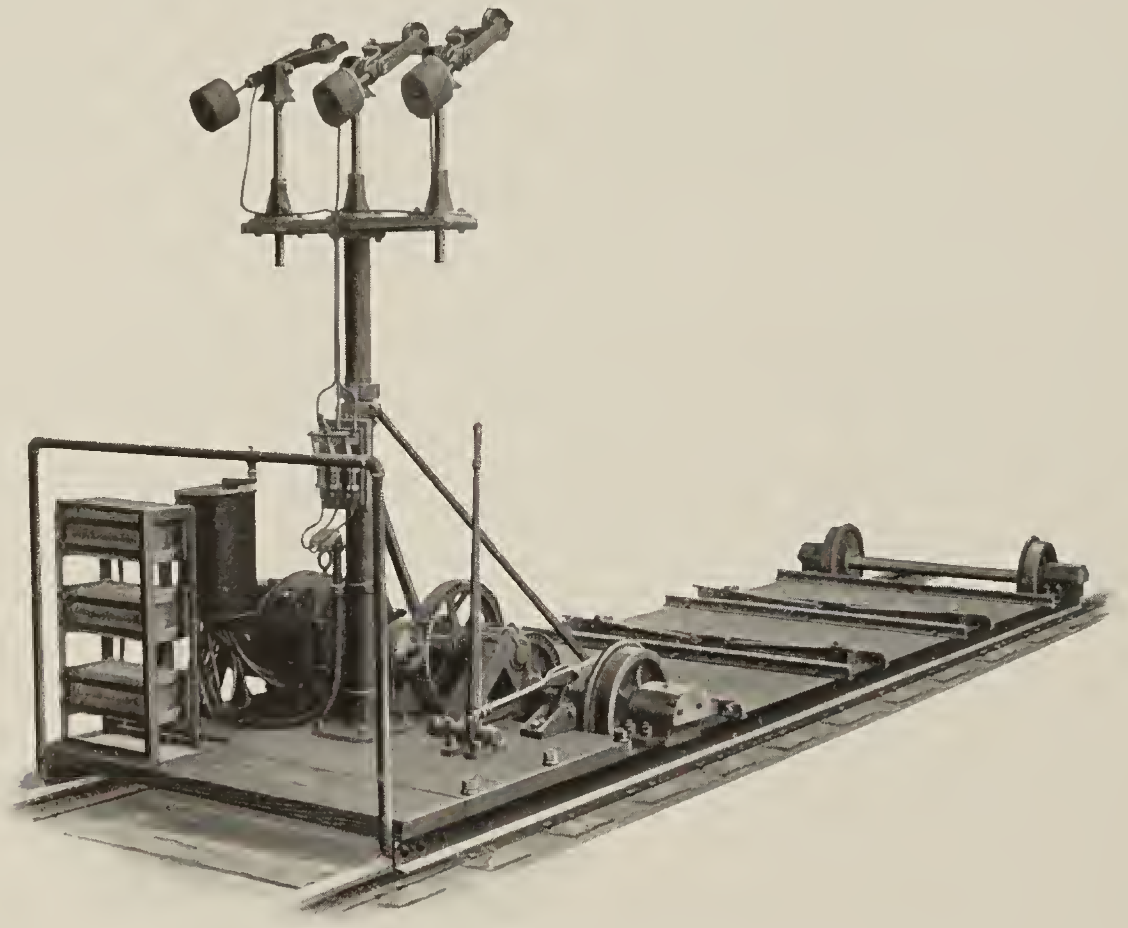
In Writing Us About Cars It Is Imperative That You Give "Track Gauge" as Indicated by Above Diagram. Your Close Attention to This Will Avoid a Great Deal of Unnecessary Trouble and Loss of Time

Remember, we follow the practice of railways in specifying track gauge. In every case track gauge means exactly what the cut shows, the distance between the rails. We cannot be responsible for errors of customers which may arise from their overlooking or ignoring the standard railway practice of designating track gauge. Study the cut. Pay particular attention to it in ordering cars. Care in this matter will save delays and expense.

American No. 296 Triple-Track Electric Transfer Car

THE No. 296 Electric Transfer Car is designed for handling dryer cars from machine room to dryer or from dryer to kilns. It is equipped with either a direct or alternating current 10 H. P. motor, also for either over head trolley wires or the third rail system as may be specified on order.

The motor is geared direct to the driving axle and is mounted on a heavy cast iron base plate extending full width of car, which also supports the brake apparatus, adjustable trolley pole and controller. The controller and brake lever are conveniently located for the operator, and the car is at all times under perfect control. Each dryer car track is equipped with two of our adjustable wheel locking devices for blocking the dryer car on the transfer car.



American No. 296 Triple-Track Electric Transfer Car

Capacity

The rated capacity of the triple-track car is two loaded and one empty dryer cars at a speed of 600 feet per minute.

SPECIFICATIONS

Main Frame

The two side rails are built up sections, made of two 4″ steel channels with a 4″ x 1¼″ steel plate between and all riveted together to form a beam, these are fabricated together with 4″ cross-channels. The whole frame being held square and rigid by a ¼″ thick steel plate extending the full length and width of the loading deck, making a type of construction that is stiff and yet flexible enough to take care of any unevenness in the track. The deck is supported its entire length in the center by a 4″ x 3″ x ⅜″ angle, all joints made with the required number of ½″ diameter rivets to give a large factor of safety.

Wheels

Are chilled cast iron, strong and well proportioned, 17¼″ diameter, 3″ tread, 1″ flange. Weight 150 pounds.

Journal Bearings

Car is equipped with Hyatt Roller Bearings.

Axle

Cold rolled steel, 3″ diameter.

Gauge and Wheel Base

Track gauge 4′. Wheel base for triple track car with 24″ gauge dryer car tracks 13′ 1″.

Dryer Car Tracks

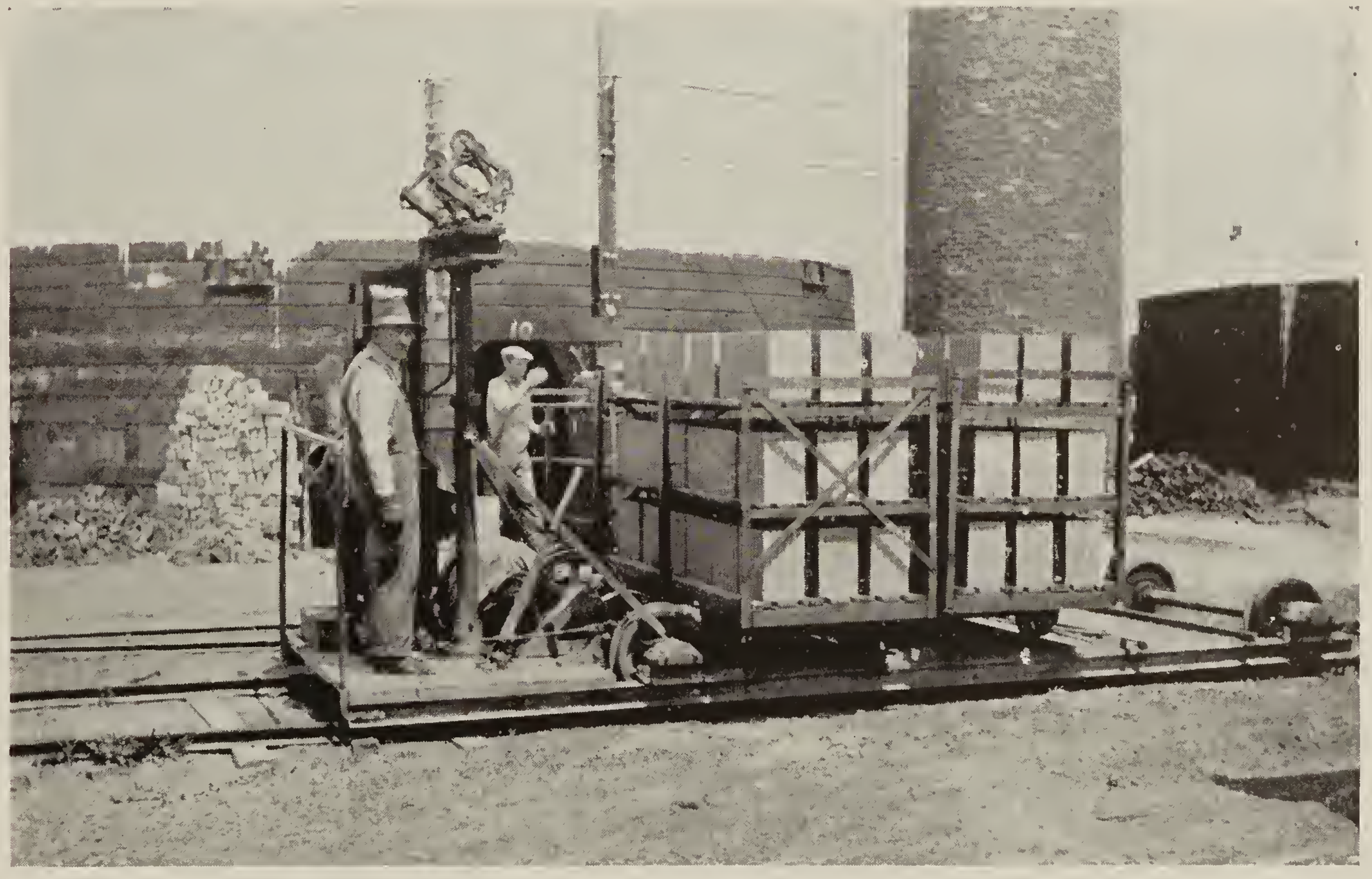
From top of transfer car track to top of dryer car track 7⅝″.

From inside of transfer track to end of dryer car track 10″.

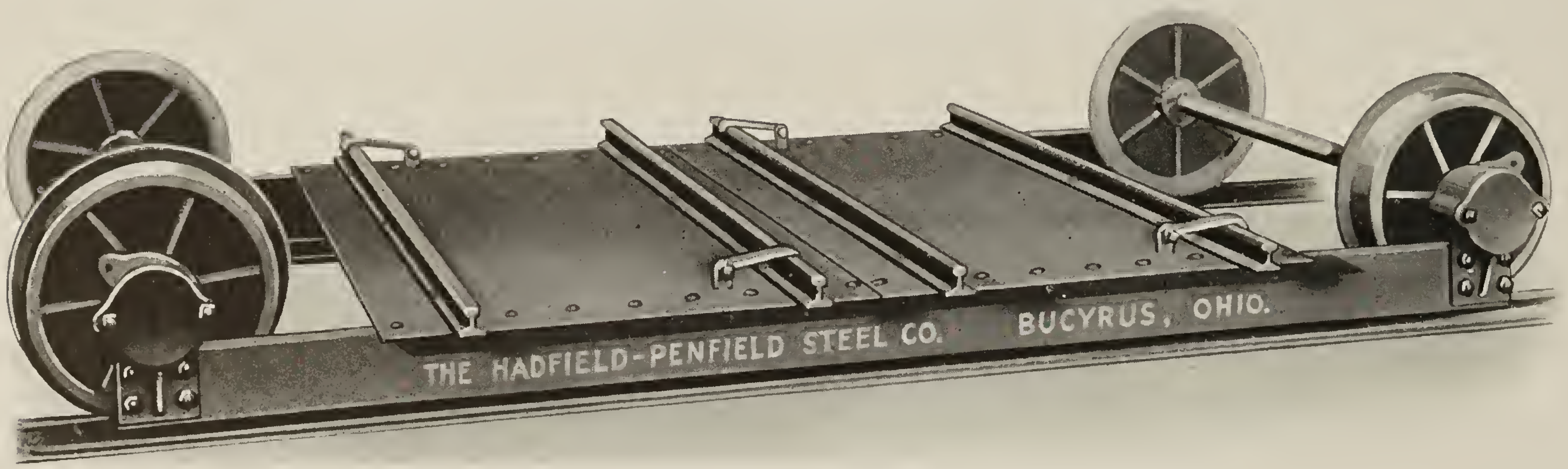
Length of dryer car track 5′ 8″. Gauge made to suit specifications on order.

Dimensions

Length over all	19′ 0″
Width over all	5′ 11½″
Height of trolley wire from top of rail	8′ 0″
Center to center of dryer car tracks for 24″ track gauge	39½″



American No. 421-A Double-Track Transfer Car



American No. 421-A Double-Track Transfer Car. Weight 1500 Lbs.

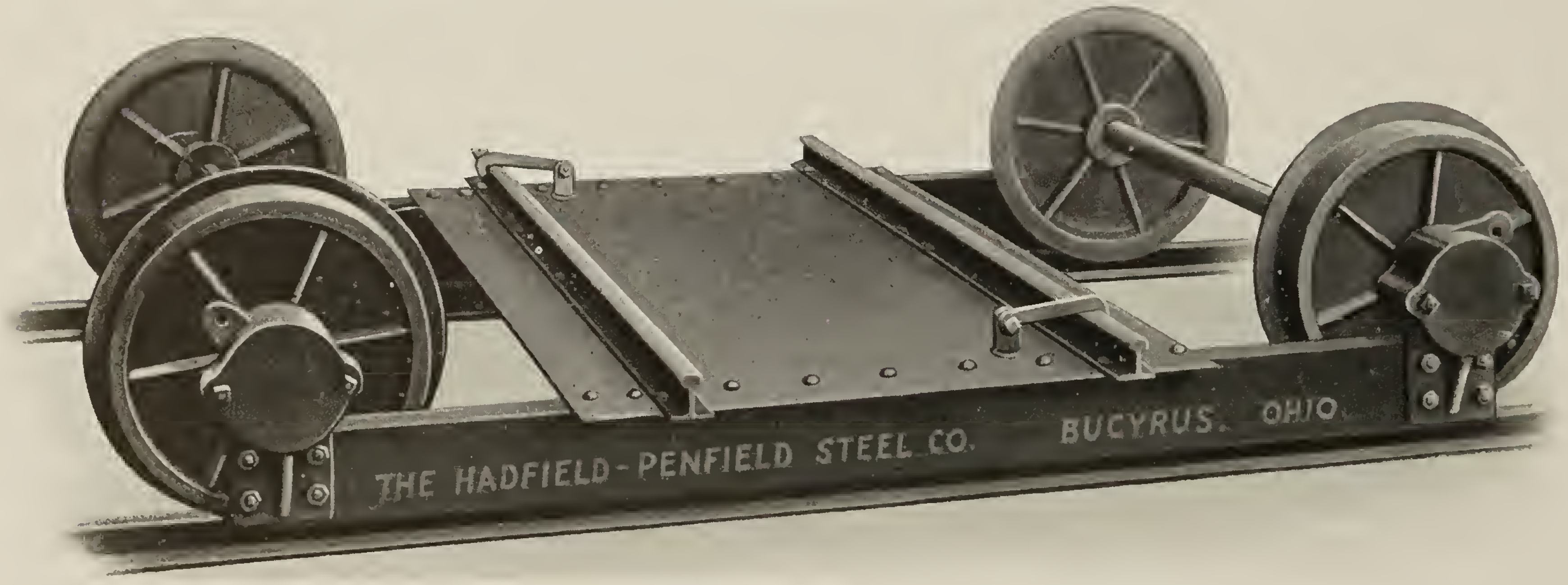
SPECIFICATIONS

Frame is made of 4″ steel channels.
Deck plates are steel 36″ wide, 5′ 2″ long and ¼″ thick, riveted to the frame.
Wheels are cast iron chilled, 17¼″ diameter.
Axles are 2″ diameter.
Hyatt Roller Bearings.
16-pound rails, 5′ 6″ long.

DIMENSIONS

Wheel base	8′ 6″
Length over all (with brake handle)	13′
Length over all (without brake handle)	10′
Width over all	5′ 6″
Height track to track	8″
Track gauge	48″

American No. 417-A Single-Track Transfer Car



American No. 417-A Single-Track Transfer Car. Weight 1200 Lbs.

DIMENSIONS

Wheel base	5′ 6″	Width over all	5′ 6″
Length over all (with brake handle)	10′	Height track to track	8″
Length over all (without brake handle)	7′	Track gauge	48″

American Style "C" Ball-Bearing Turntable

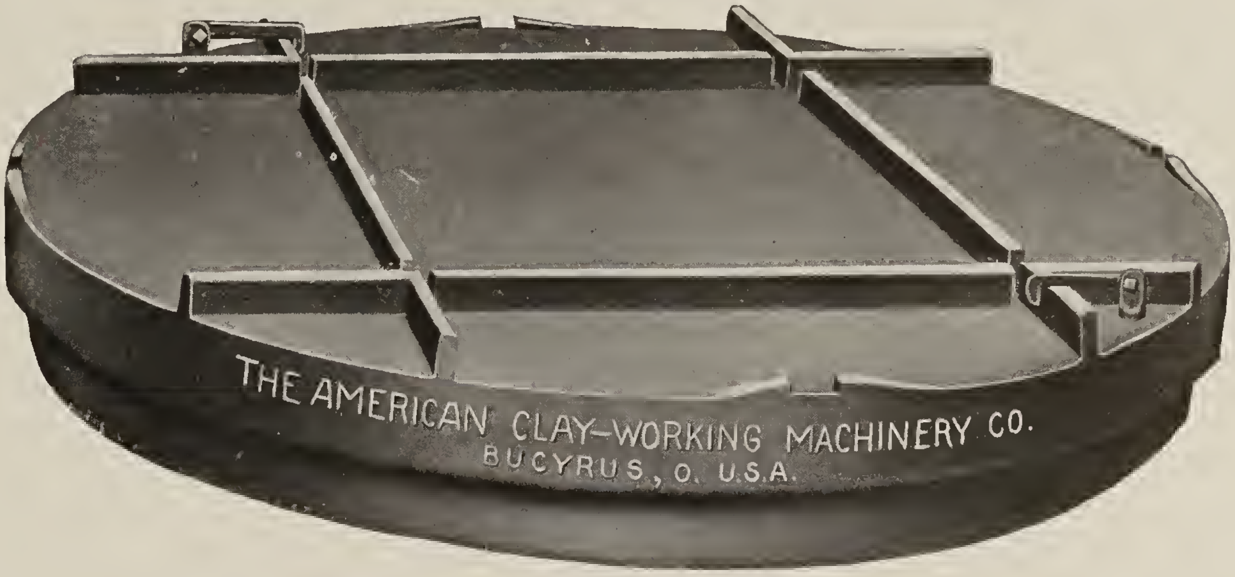


Figure 1. American Style "C" Turntable Closed

THE base of this turntable is designed with a track, which is faced true, and a center post, which is provided with a turned raceway. The turntable is also provided with corresponding track and center raceway. The table rests on eight 1″ balls, forming a ball-bearing center plate. An intermediate, independent roller frame is used, the center of which slips over the center post to keep the roller frame central and the rollers on the tracks. The base is arranged with a rim projecting above the tracks, and the turntable has a similar rim, which telescopes over the base rim; thus prevents dirt and snow from getting under the turntable. On top of the table are two sets of track rails placed at right angles with each other, with the necessary stops to prevent the cars from running off and to hold the table from turning while cars are moving on or off the table.

Figure 1 illustrates the table down or assembled. Figure 2 represents the turntable with the top removed to show construction. Weight 6′ turntable 2330 lbs.

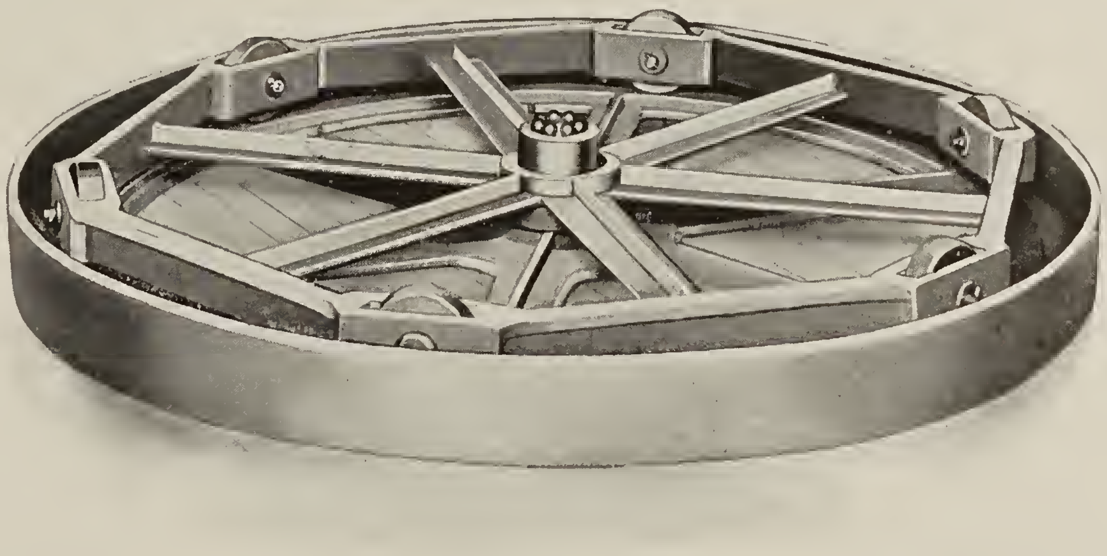
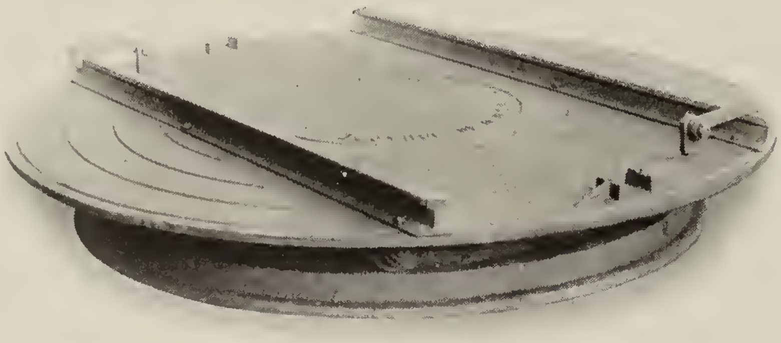


Figure 2. American Style "C" Turntable Open

American Style "B" Turntable

THIS turntable is made with a solid cast iron top which works perfectly on a pivot center bearing, and is supported by, and revolves on, eight outer wheels, securing an easy motion. This table is 5′ in diameter, weight 675 pounds.

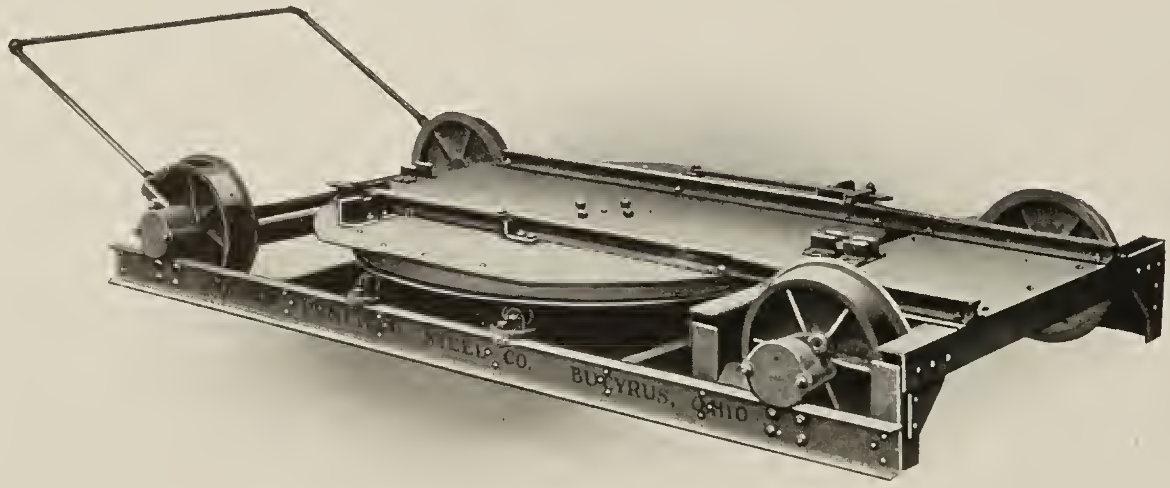
Track gauge on turntable to suit requirements.



American Style "B" Turntable

American No. 480 Combination Transfer Car and Turntable

A 6′ turntable mounted on a transfer car and combined as one unit; of substantial construction capable of handling dryer cars loaded with green brick.



American No. 480 Combination Transfer Car and Turntable

STANDARD SPECIFICATIONS

Diameter table	6′
Track gauge on turntable	24″
Track gauge for transfer car	48″
Height top of rail to top of rail	15″
Length over all	10′ 3″
Wheel base	8′ 2″
Diameter wheels	18″
Diameter axles	2″
Weight	2,045 lbs.

Kiln Department

W. A. RIDDELL COMPANY

BUCYRUS OHIO

American Haigh Continuous Kiln

Here are a few plants Making Money by Saving Fuel—because they use the Haigh Kiln. We will be pleased to add you to the list. The Haigh will help you make a better profit and the kiln will "pay for itself."

A Few Users of the Haigh Continuous Kiln

Hope Brick Works, Hope, Ark.
Capacity, 40,000 brick per day.

Whitacre-Greer Fireproofing Co.,
Chicago Hts., Ill.
Burning hollow tile.

Shale Brick Co., Columbus, Ohio.
30,000 brick per day.

Onondaga Brick & Tile Corp., Warners, N. Y.
Capacity, 60,000 brick per day.

Bruschi Nunez & Co., Mexico City, Mex. One large kiln.

La Compania Ladrilla De Teolyucan, Mexico.
Two large kilns.

Merry Bros., Augusta, Ga. Two kilns, 100,000 brick a day.
Also 100 tons hollow tile per day.

William Conway, Philadelphia, Pa.
Capacity, 40,000 soft mud brick per day.

Standard Brick Mfg. Co., Evansville, Ind.
Capacity, 40,000 brick per day.

First Avenue Brick & Tile Co., Evansville, Ind.
Capacity, 35,000 soft mud brick per day.

Marion Brick Works, Montezuma, Ind.
Burning hollow tile.

Lehigh Brick Works, Allentown, Pa.
Capacity, 60,000 brick per day.

Industras Sanfernando
Cali, Columbia, So. Am.
50,000 brick per day

Livesey Brick Co., Omaha, Neb.
Capacity, 30,000 brick per day.

Ohio Brick Co., Toledo, Ohio.
Capacity, 35,000 soft mud brick per day.

California Brick Co., Niles, Calif.
150 tons hollow ware.

Richlands Shale Brick Co., Richlands, Va.
30,000 brick per day.

Excelsior Brick Co., Fredonia, Kansas.
Capacity, 100,000 brick per day.

Birmingham Clay Products Co.,
Birmingham, Ala.
Capacity, 40,000 dry press brick per day.

Richards Brick Co., Edwardsville, Ill.
Capacity, 20,000 dry press brick per day in each kiln. Two kilns.

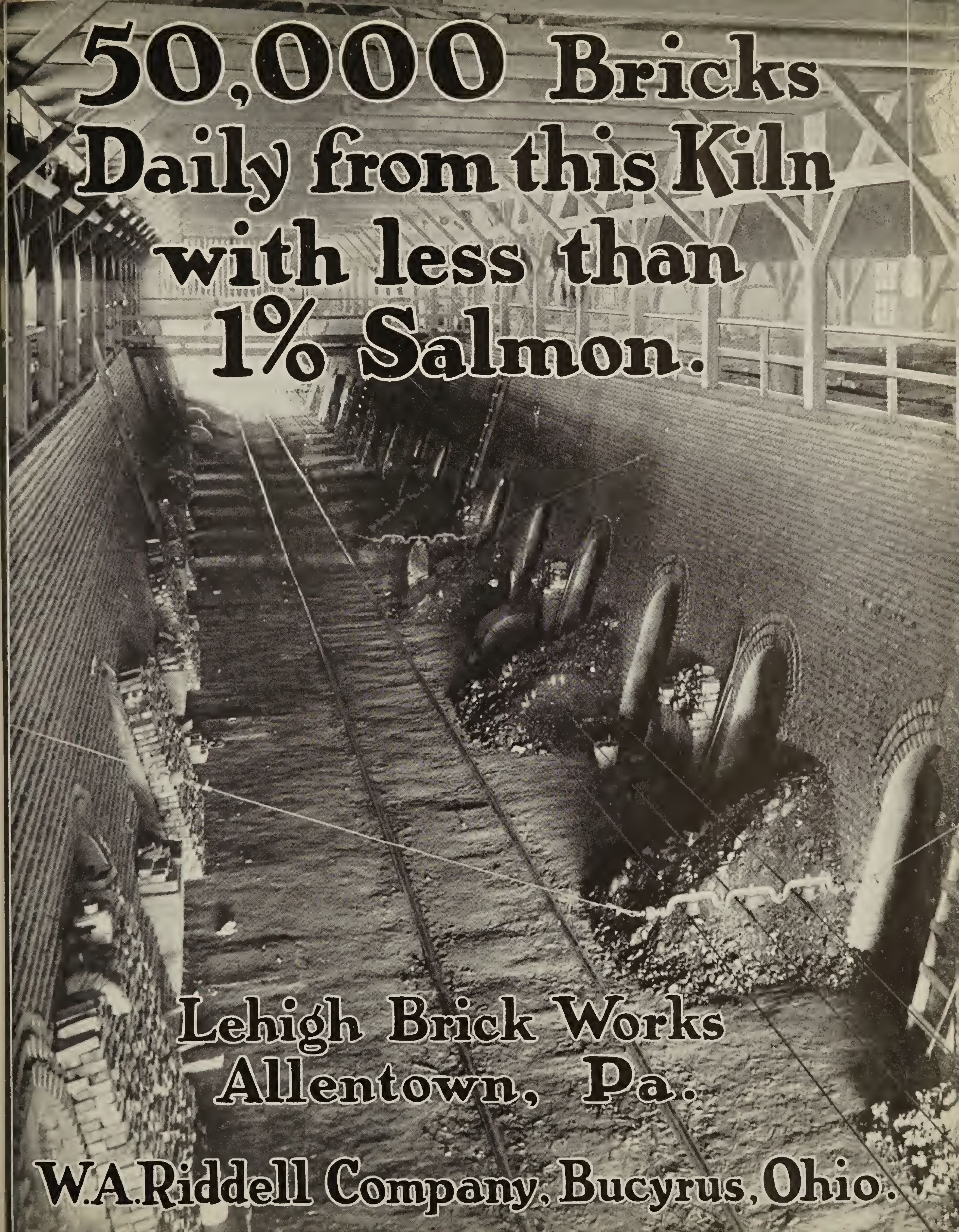
Standard Clay Products Co., Slidell, La.
Capacity, 100,000 brick per day.

Consolidated Brick Co., Horseheads, N. Y.
Capacity, 60,000 brick per day.

Sioux City Brick & Tile Co., Sioux City, Iowa.
Capacity, 100,000 brick per day. Two kilns.

Metropolitan Paving Brick Co., Bessemer, Pa.
Capacity, 160,000 paving blocks per day.

Burma Government, Rangoon, Burma, India.
Two kilns.
100,000 brick per day.



50,000 Bricks
Daily from this Kiln
with less than
1% Salmon.

Lehigh Brick Works
Allentown, Pa.

W. A. Riddell Company, Bucyrus, Ohio.

W. A. RIDDELL COMPANY

BUCYRUS OHIO

THERE is an old-time joke about the school directors who decided to build a new school house out of the bricks in the old school house and not tear down the old school house until the new one was built.

That was a joke but—in building your kiln it becomes almost a possibility

Because—

Side Firing of Haigh Kiln

You Can Do It

You can build a few needed compartments of a Haigh Kiln and in these few units you can burn the bricks of your own make to build the rest of your kiln, thereby utilizing your own product and extending the kiln by adding units as needed.

Moreover—

The entire kiln from end to end won't cost you a cent as it can be built on the fuel you save.

You Keep the Profits

After the kiln is paid for from the savings, you keep the extra profits for all time to come and they go into your savings account.

There isn't anything mysterious about this. It has been done time and time again by many to whom we can refer you. It is a plain, straightforward business proposition from which you save half of the fuel used in burning the old way.

There Is No Obligation

Our Mr. Haigh will be pleased to talk this over with you without any obligation on your part. Just a little talk on this most interesting subject will show you where you can keep for yourself a lot of money now being wasted in burning and then you can plan for it or not as you please.

High Coal Cost

In countries where coal is scarce and high in price the Continuous Kiln is universally used. That should be a convincing argument as to the economy of the Haigh Kiln.

Coal used to be cheap in the United States, but that day is gone. Gas or oil may be used successfully for side fires in combination with coal for the top fires. Today fuel cost and labor cost dictate the selling price of clay products and limit your profits.

Labor costs are not changeable but you can save on fuel.

Save Drying Cost

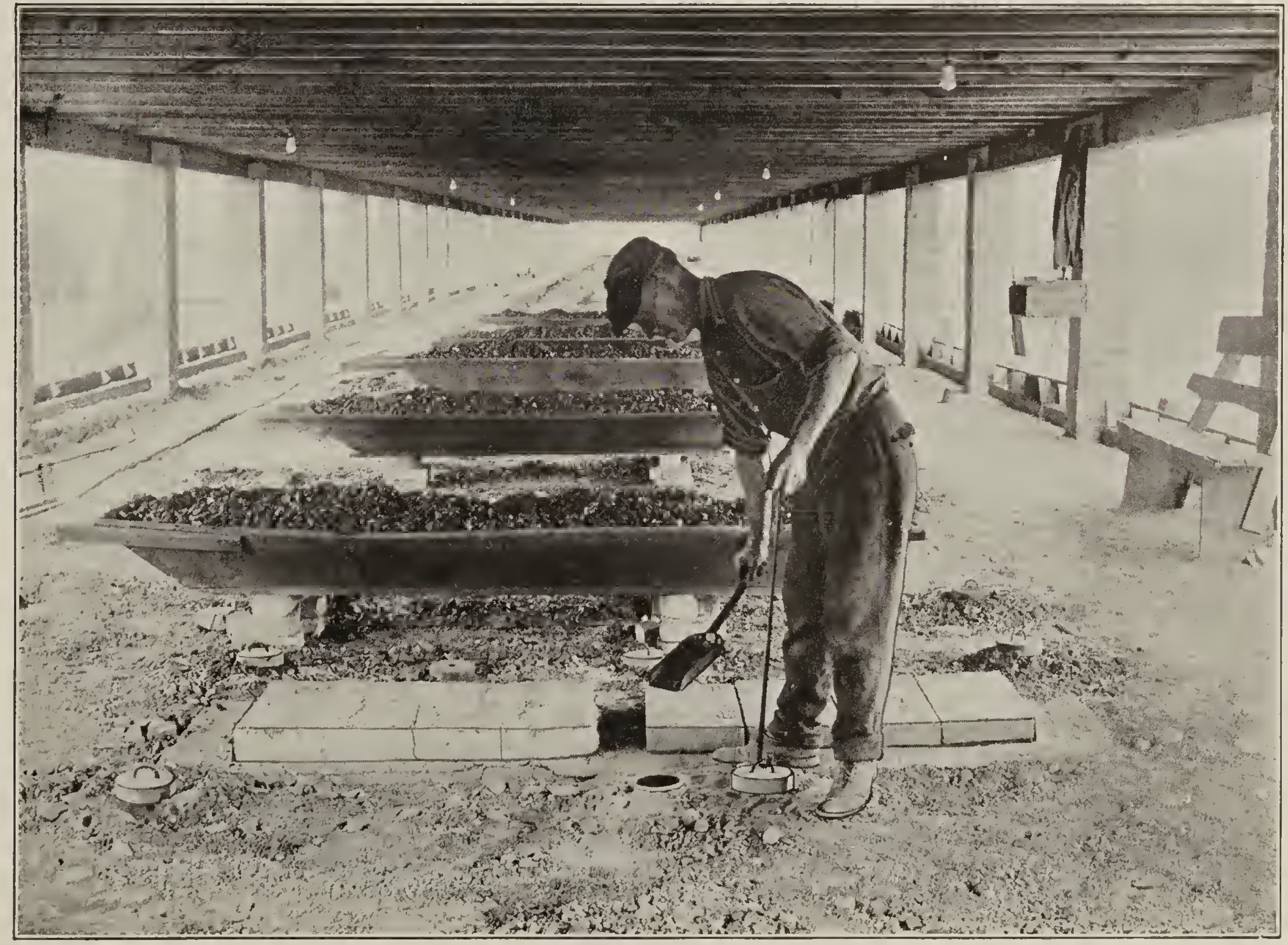
In addition to saving burning fuel on the kiln you save on drying cost.

Every bit of the waste heat from the kiln is utilized in our Waste Heat Dryer. It is really a "Fuel-less" Dryer because it is operated on a waste product.

So great is the saving of these two WARCO units that the burning and drying costs are reduced to a minimum.

What Haigh Burns

Haigh Kilns are successfully and economically burning Building Brick, Paving Block and Hollow Ware. By no other system can you produce your products so cheaply or of such high quality. In addition to cheaper burning cost and higher quality ware the Haigh Kiln will give you a higher per cent of No. 1 product.



Top Firing of Haigh Kiln

Setting Paving Block in Haigh Kiln

Under Continuous Fire

We have Haigh Kilns which have been in continuous operation for twenty years, the fires never having been out in all that time. In other cases the fires have been continuously burning for ten to fourteen years.

Haigh Kilns maintain a continuous output of ware because compartments of the kiln are successively water smoked, brought to high heat and settling point, are cooled and emptied every round of the clock. It is a "continuous" operation, all are going on at the same time in different compartments, providing an even and continuous supply of ware.

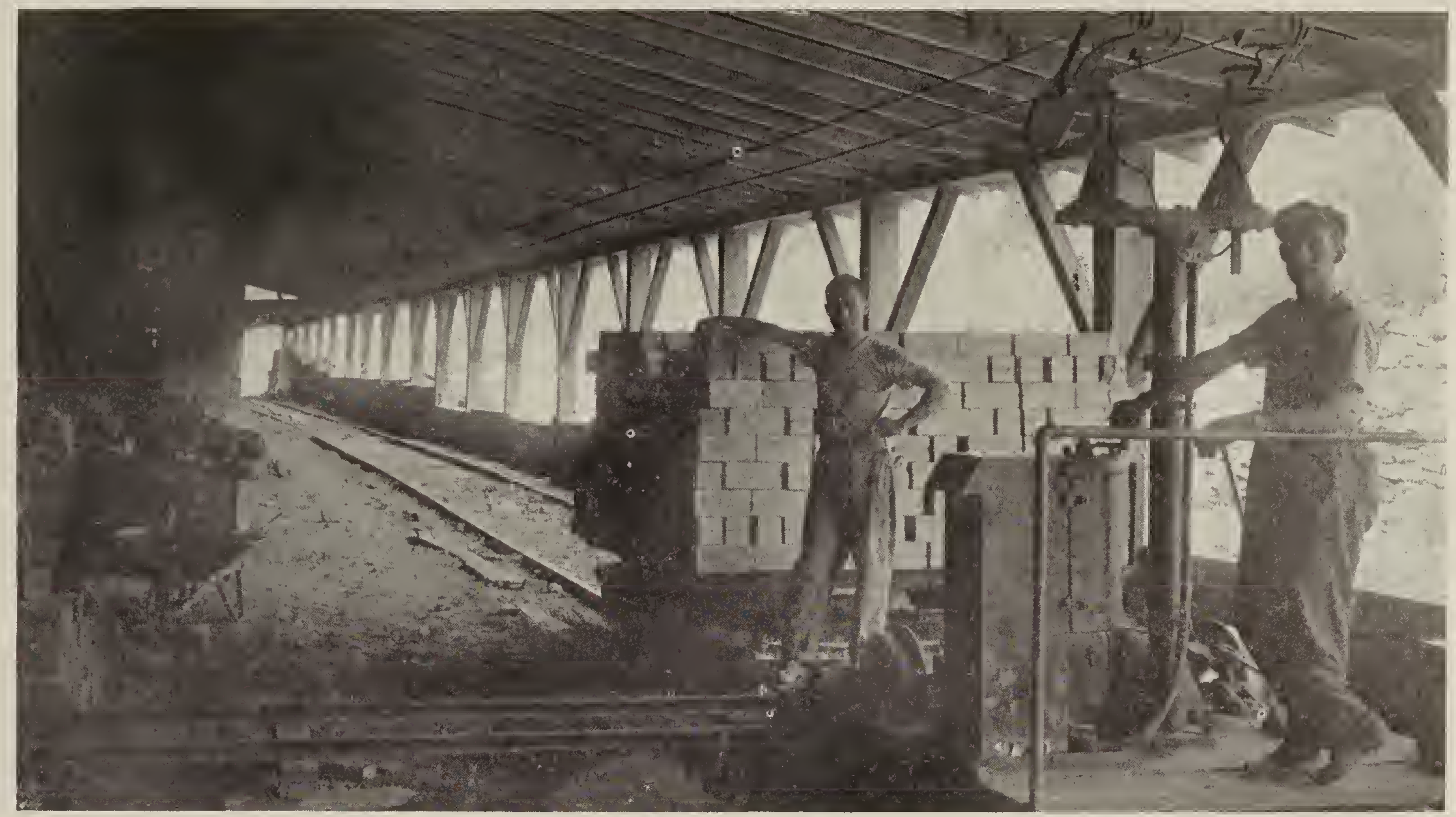
To High Heat Without Cost

When burning is finished in one compartment provision is made to draw the waste heat forward into other compartments for water smoking and in other compartments to bring the kiln to the high heat point, at which point fuel firing begins.

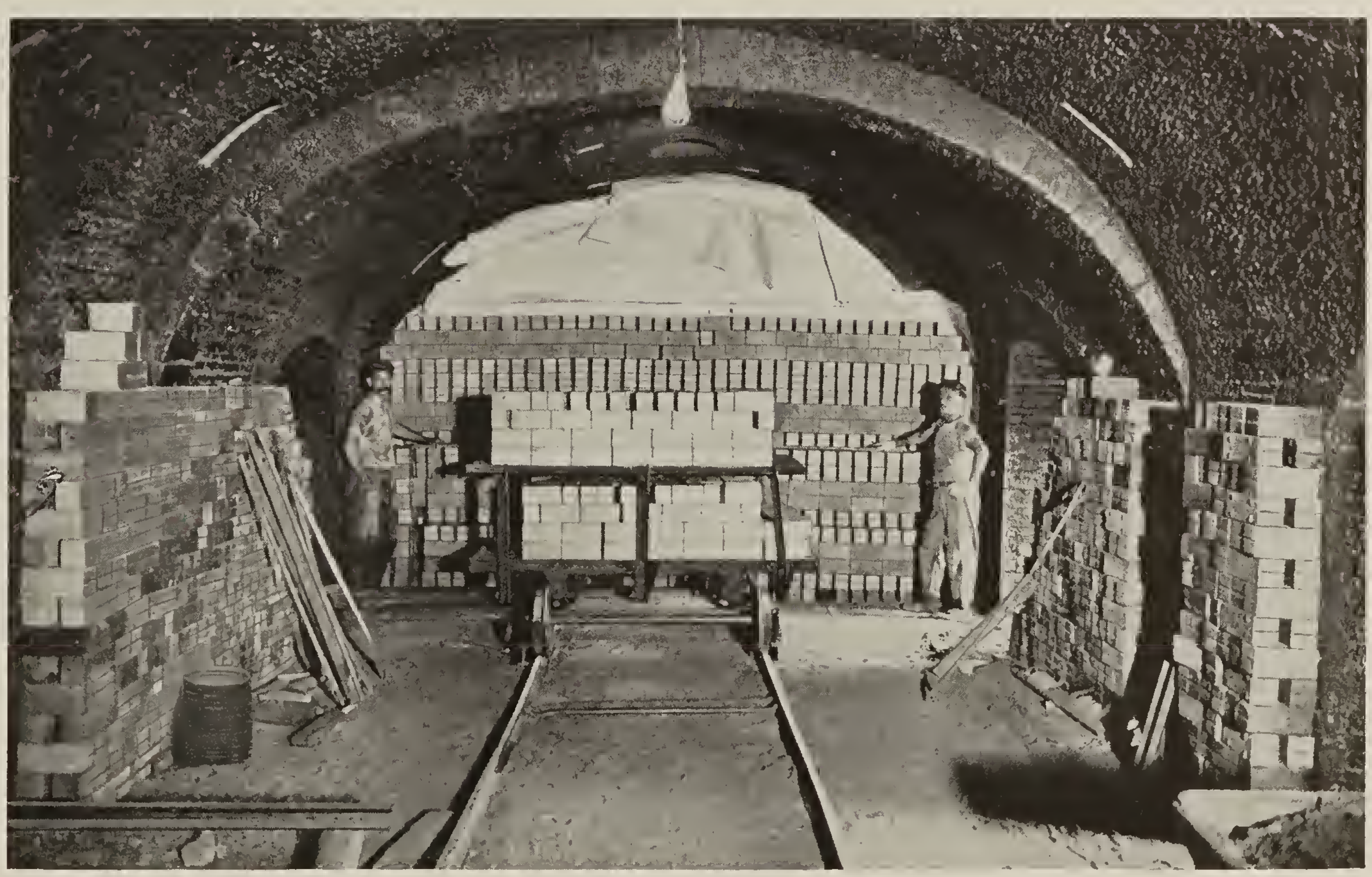
You burn no fuel for water smoking or for reaching high heat point—that is all clear saving. Back in other compartments workmen are removing the finely burned ware for the market, while in other compartments other workmen are setting the unburned ware for burning.

Kiln Speeds and Regulates Output

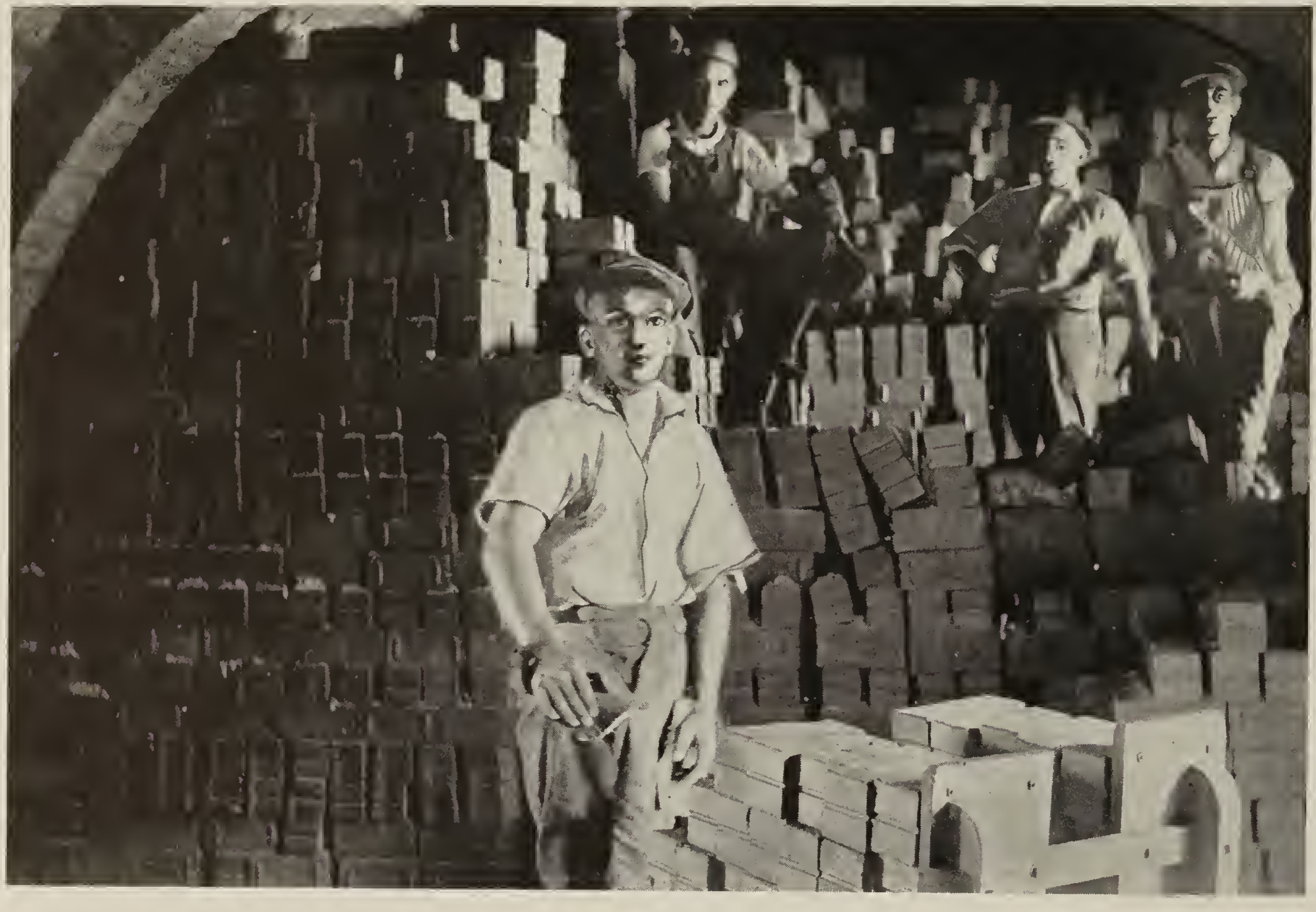
The Haigh Kiln is the Clock of the plant. It keeps things moving in regular routine, it is the pace maker, the fuel saver, the money maker. It is an interesting story and you will enjoy hearing the details and the possibilities first hand.



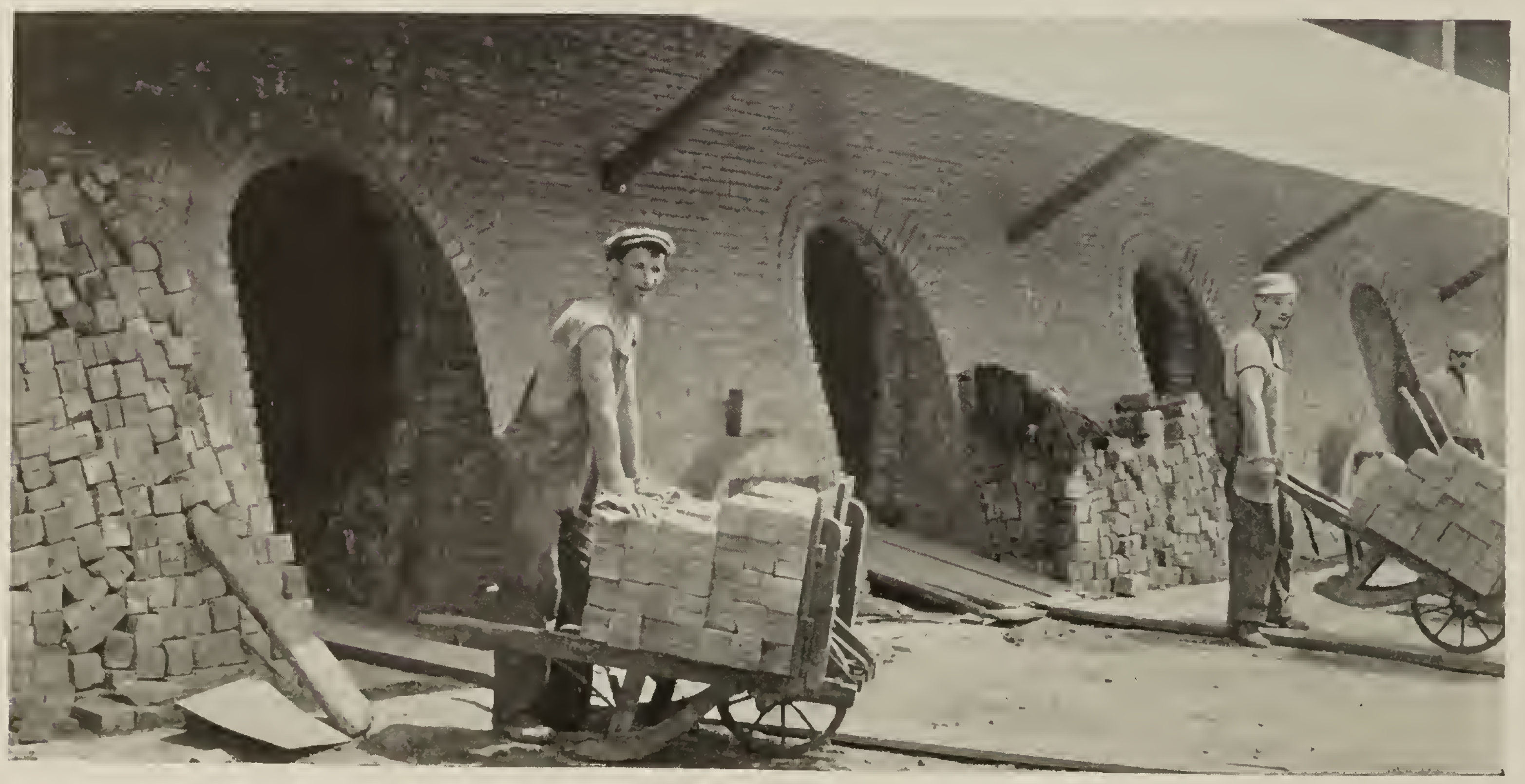
Electric Transfer Car Delivering Brick to Haigh Continuous Kiln



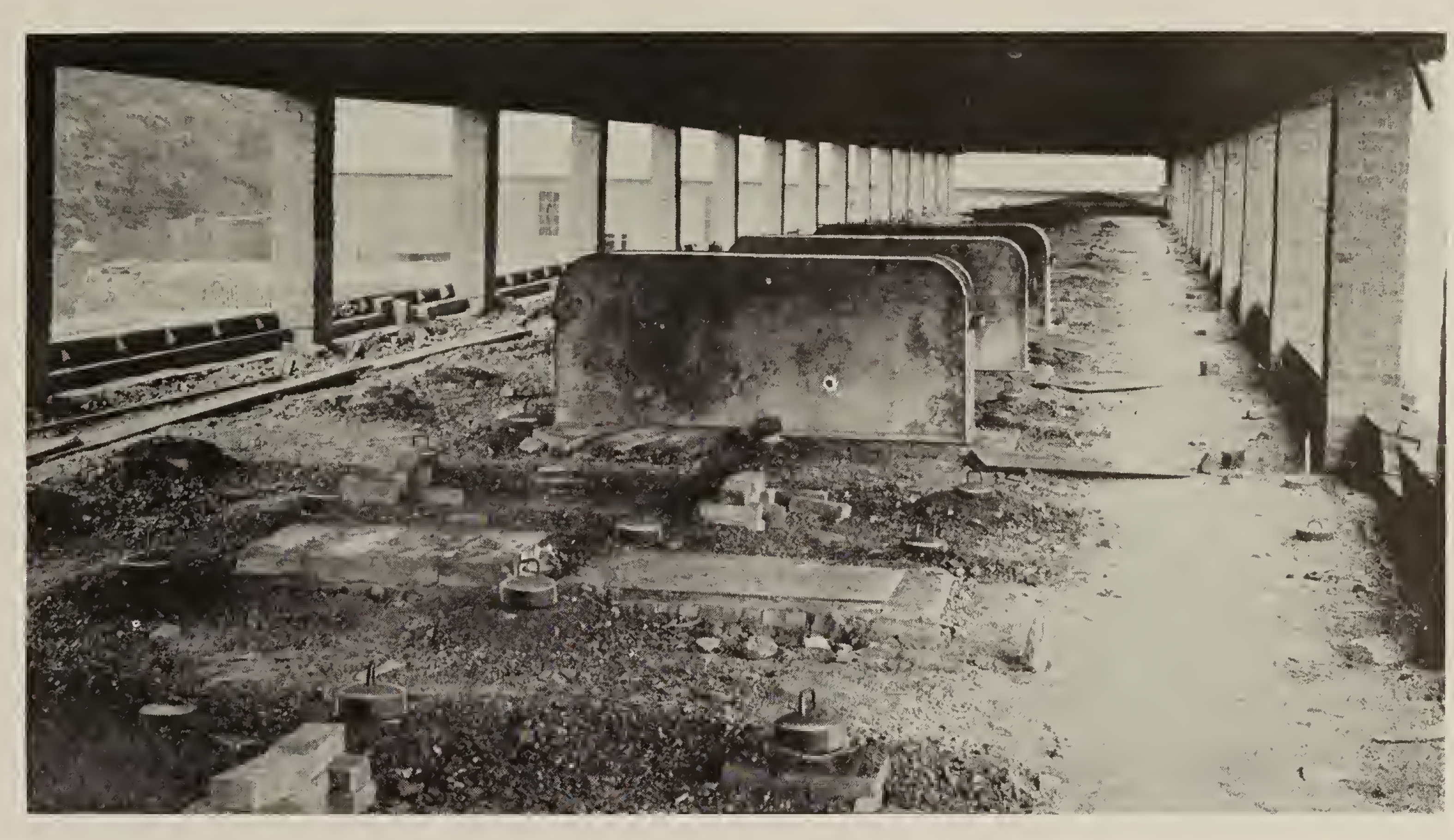
Haigh Continuous Kiln—Showing How Paper Partition is Used to Stop the Back Draft



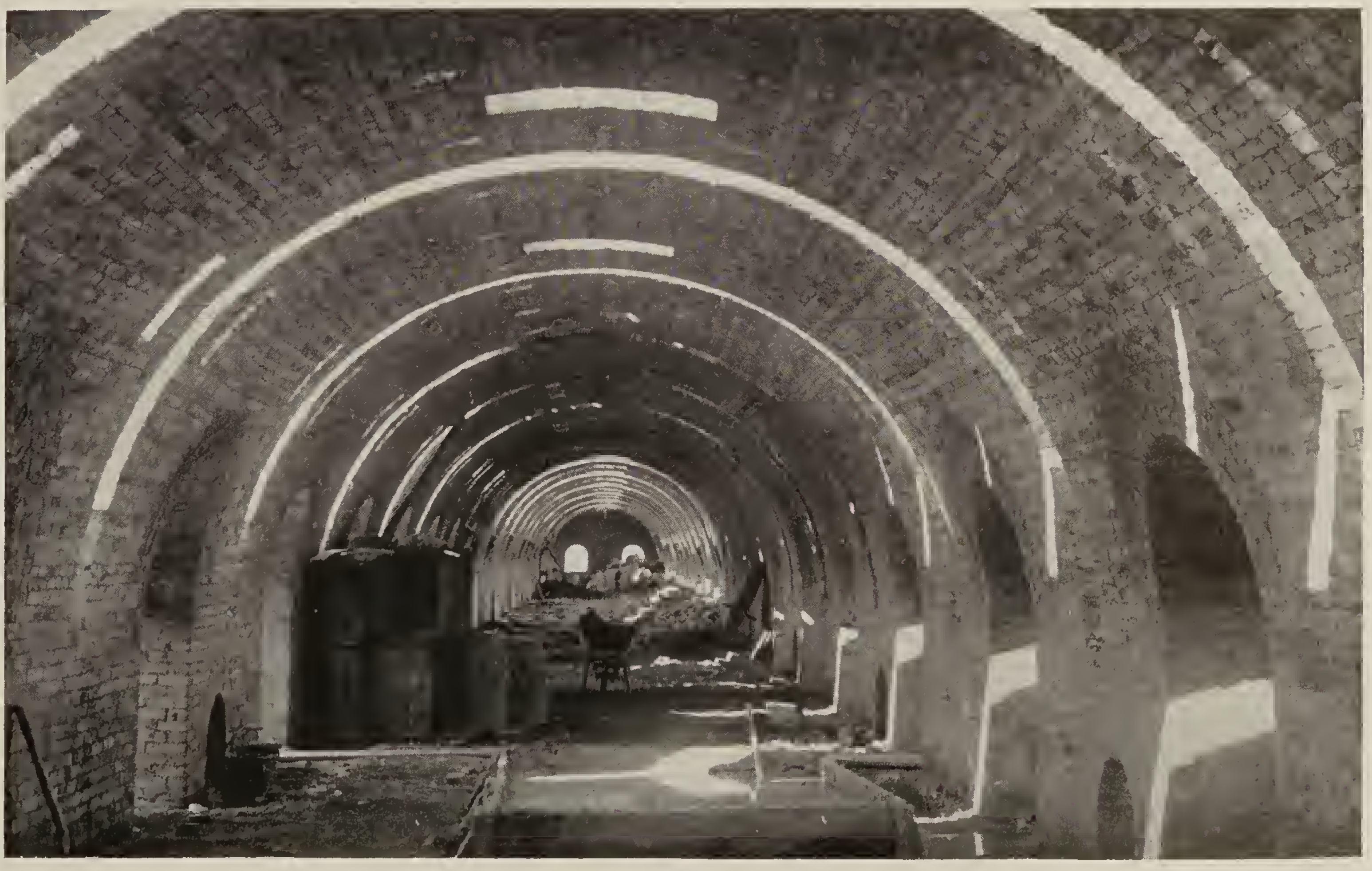
Haigh Continuous Kiln—Showing Burned Ware in Kiln



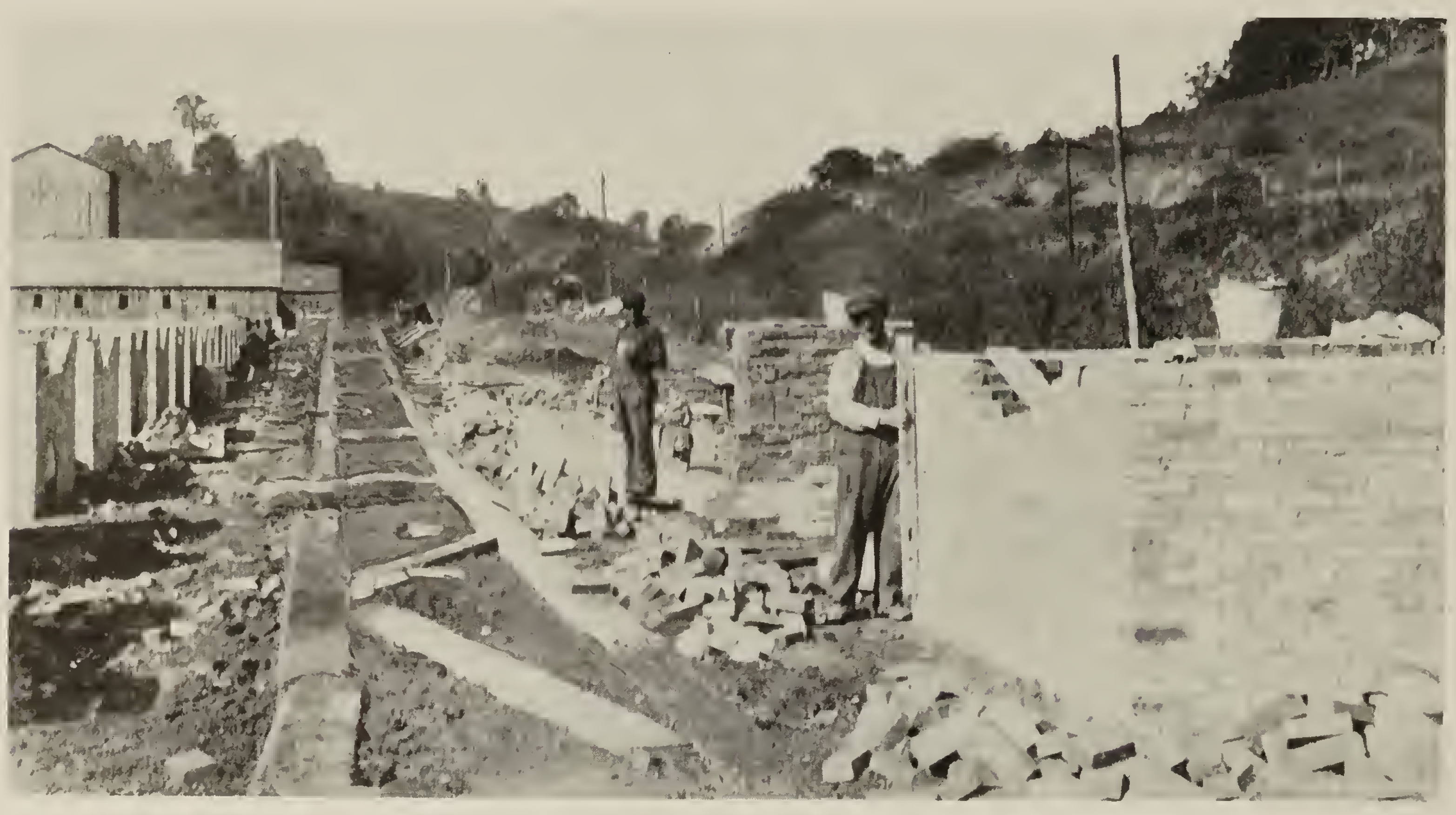
Haigh Continuous Kiln—Wheeling Burned Ware Out of Kiln



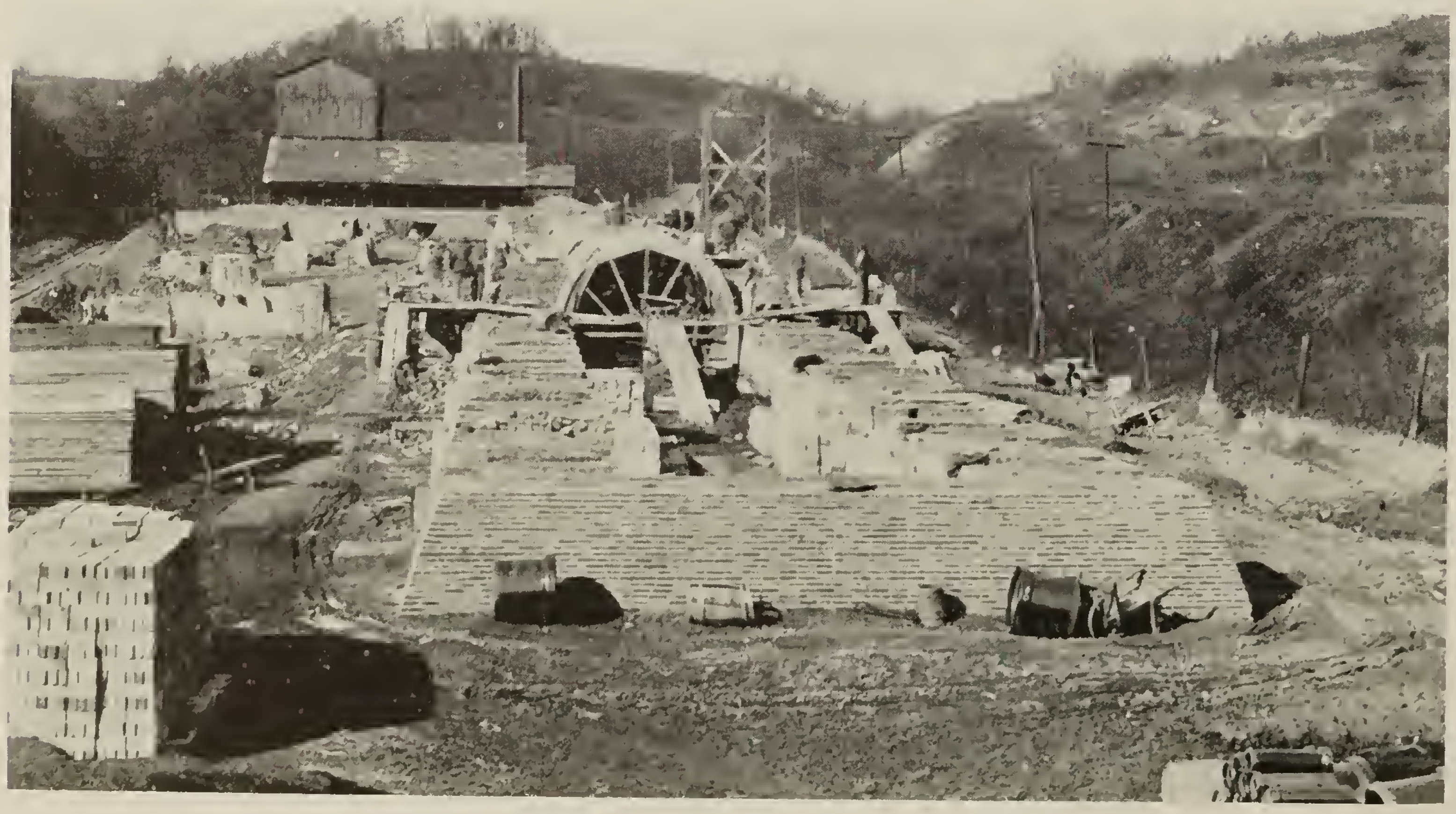
Haigh Continuous Kiln—Showing Waste Head Hoods on Top of Kiln



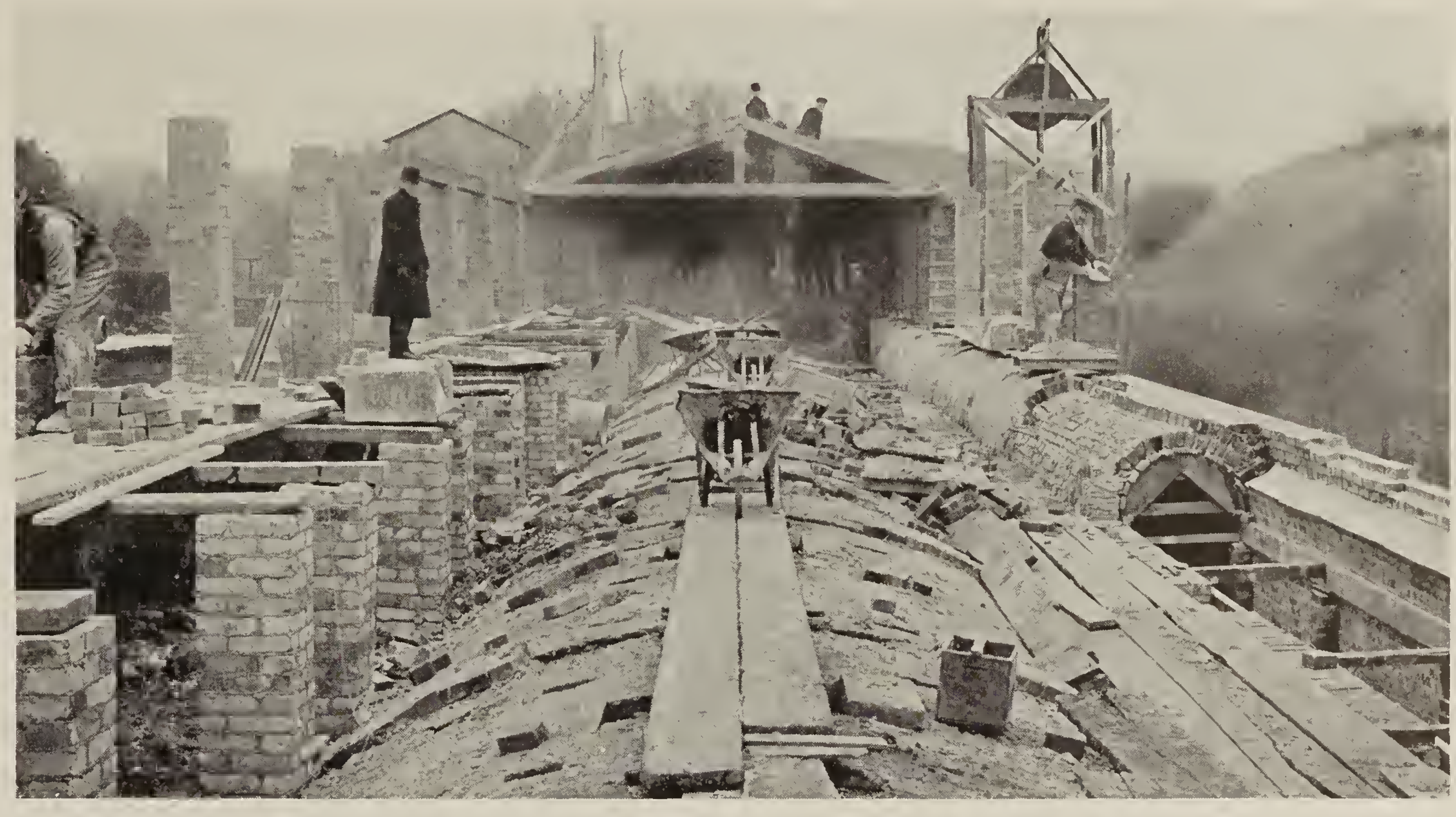
Haigh Continuous Kiln—Interior View



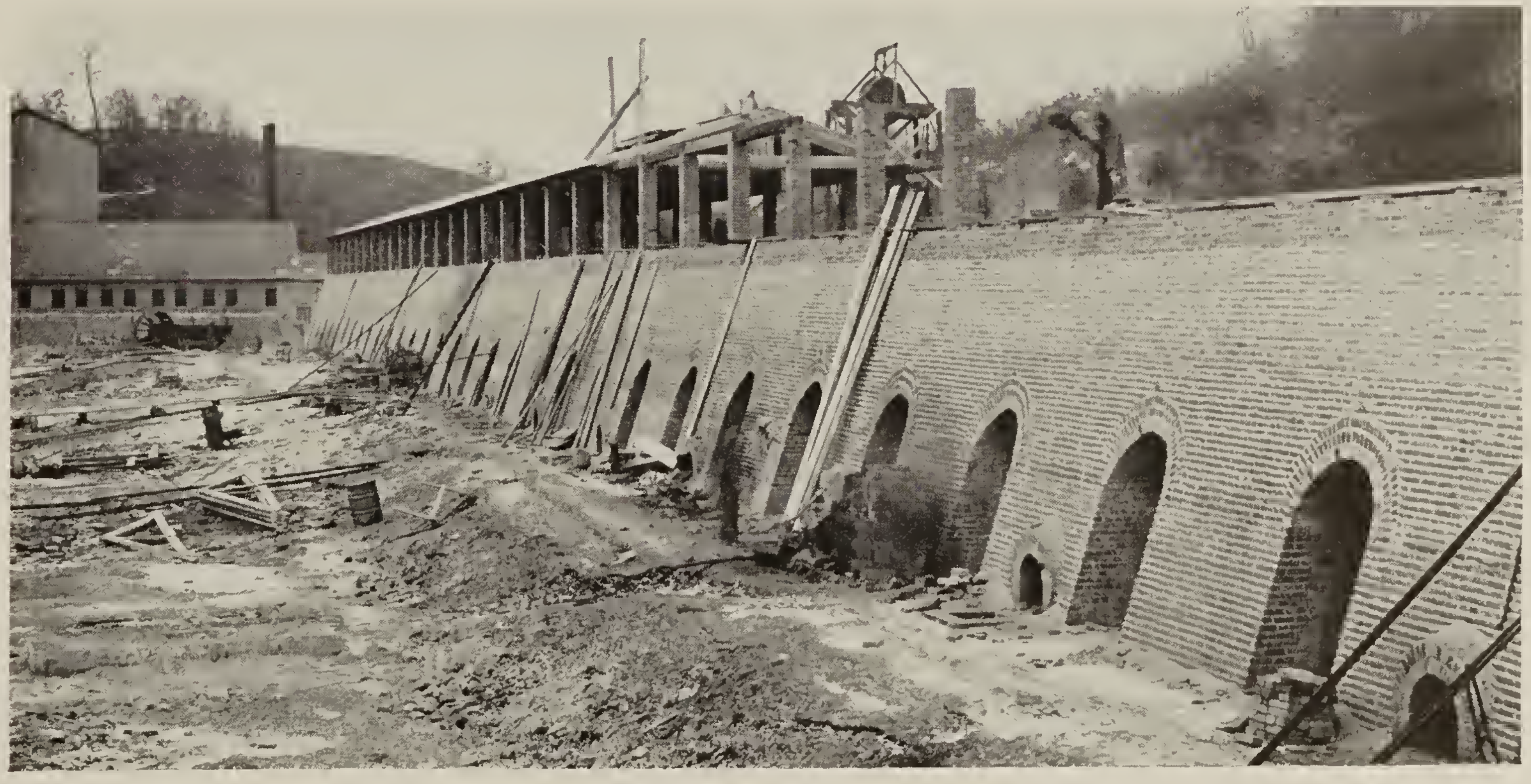
Haigh Continuous Kiln Under Construction



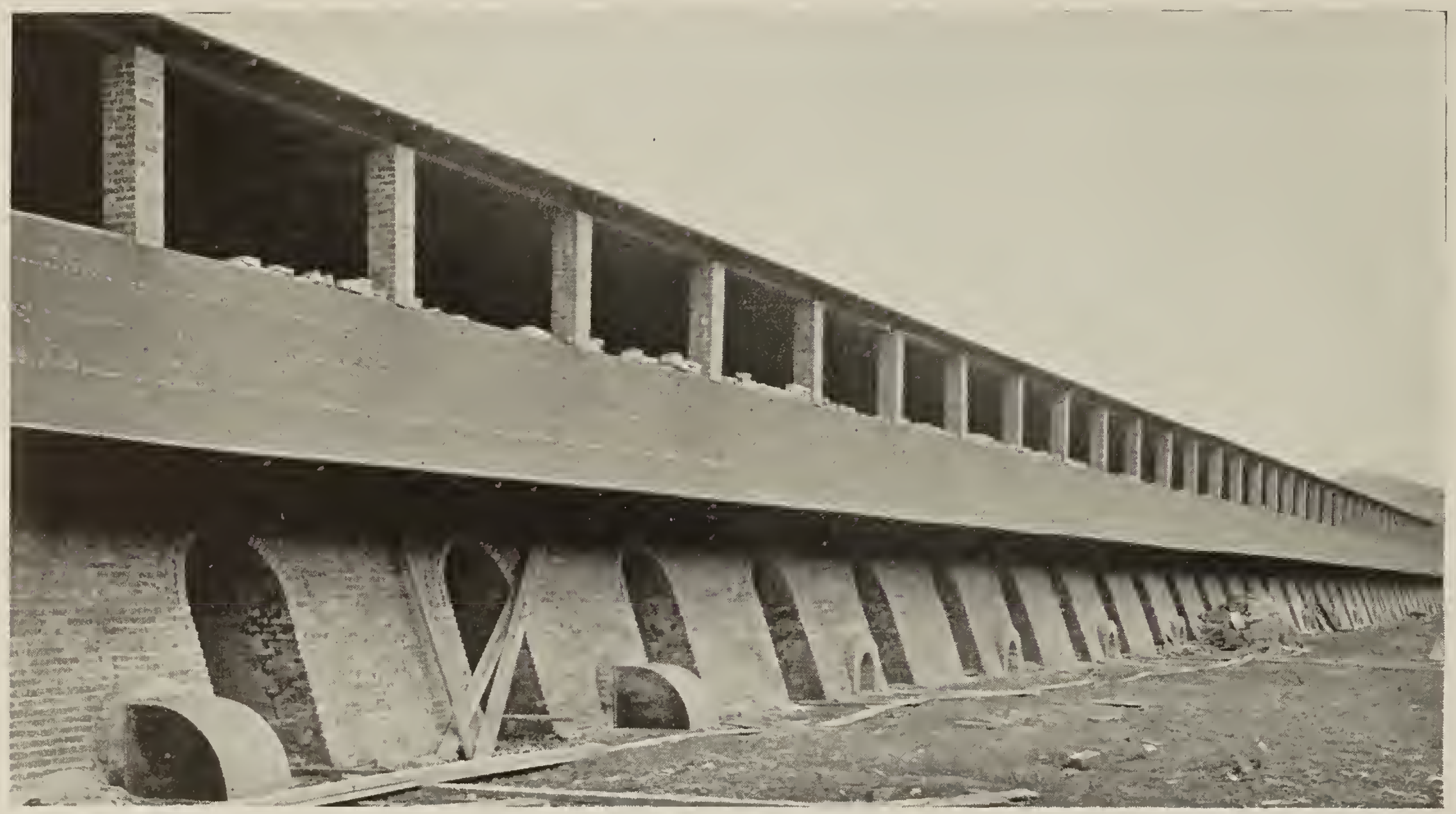
Haigh Continuous—Kiln Showing Method of Turning the Main Arch



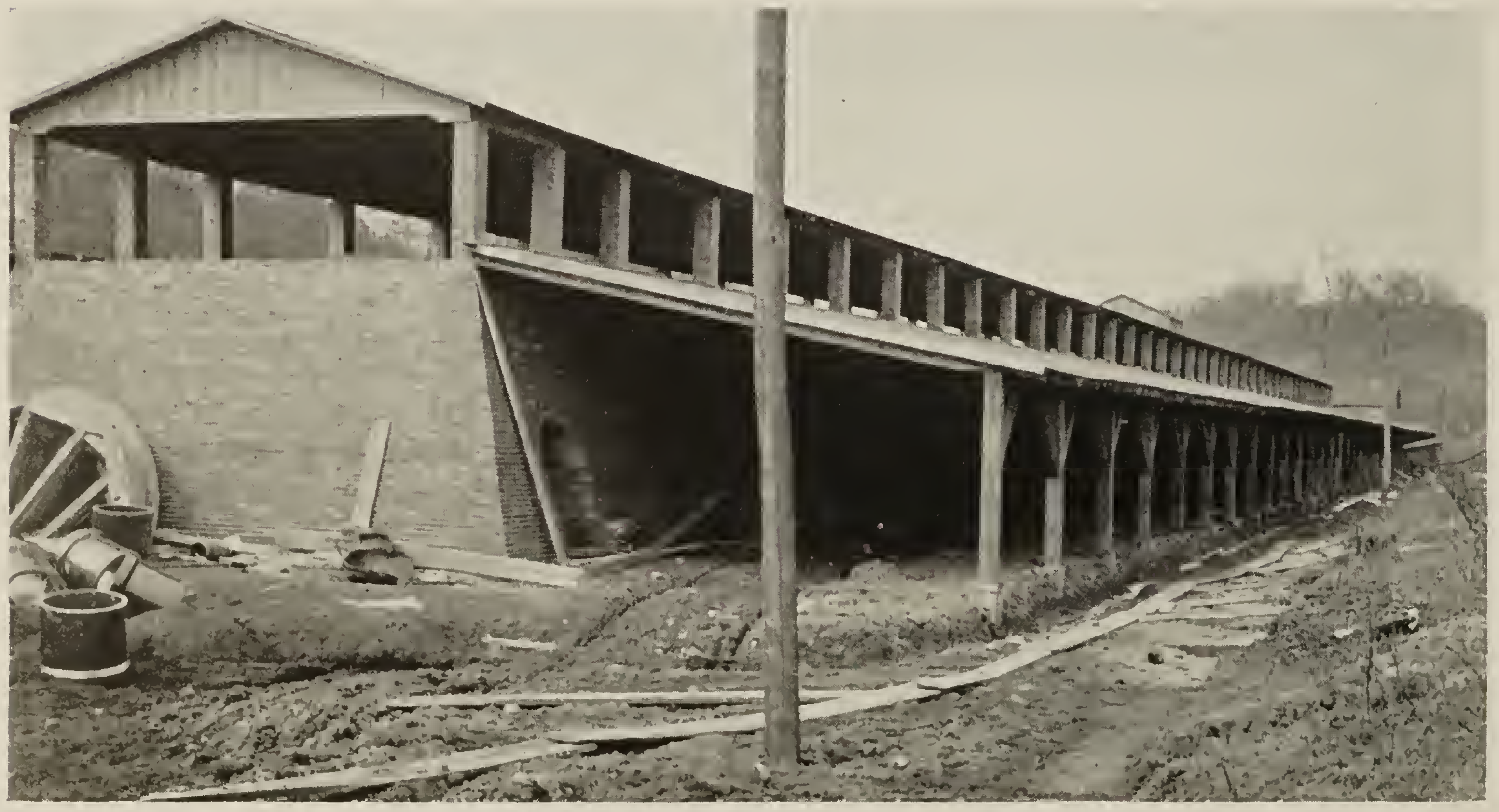
Haigh Continuous Kiln—Showing the Waste Heat Flue Above the Crown



Haigh Continuous Kiln—Showing Roof Supported on Kiln Walls



Haigh Continuous Kiln—Showing Smoke Duct Hoods Connected



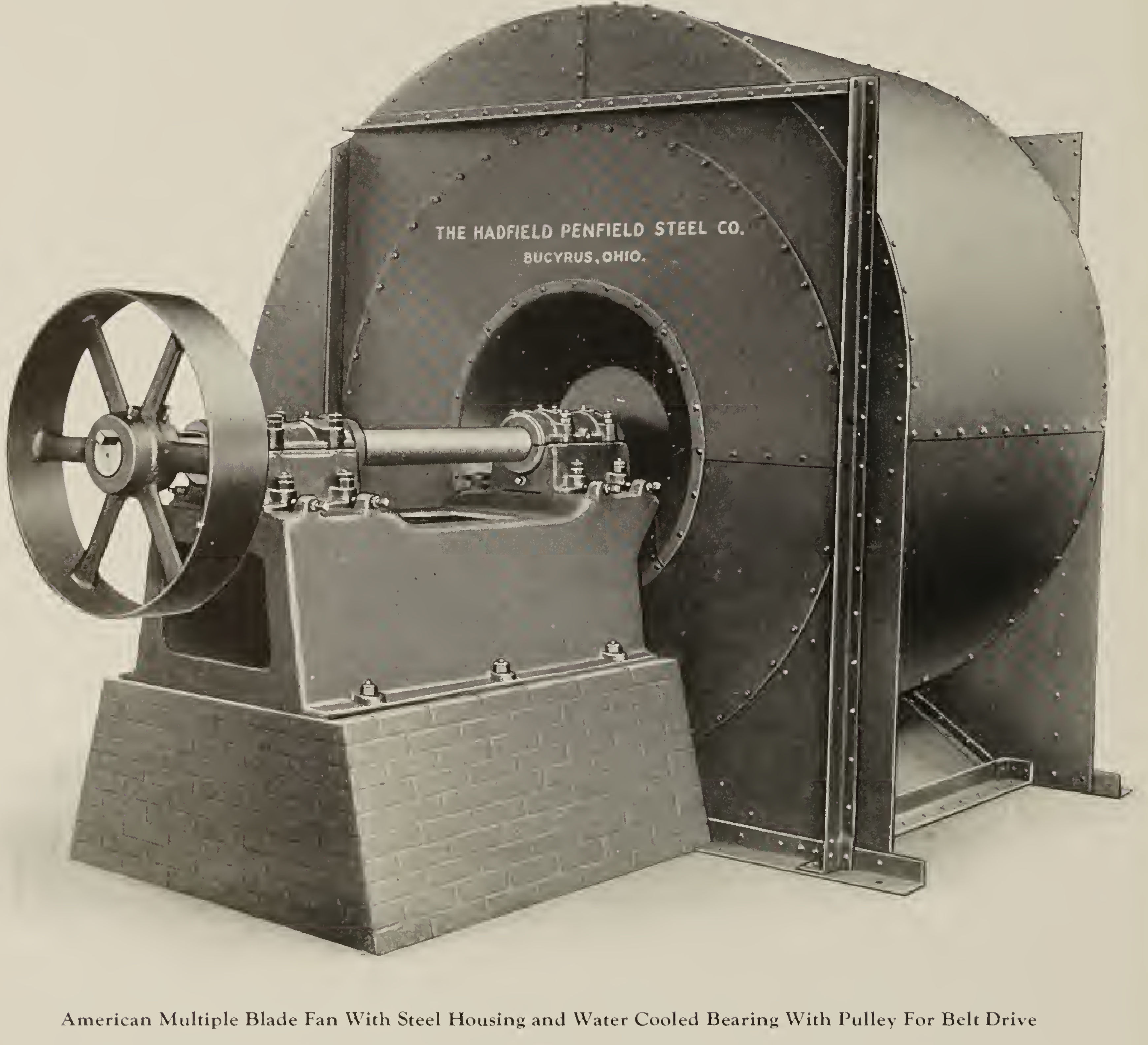
Haigh Continuous Kiln—Showing One Style of Roof

Iron Work for Haigh Continuous Kiln

Waste-Heat Hood for Haigh Kiln

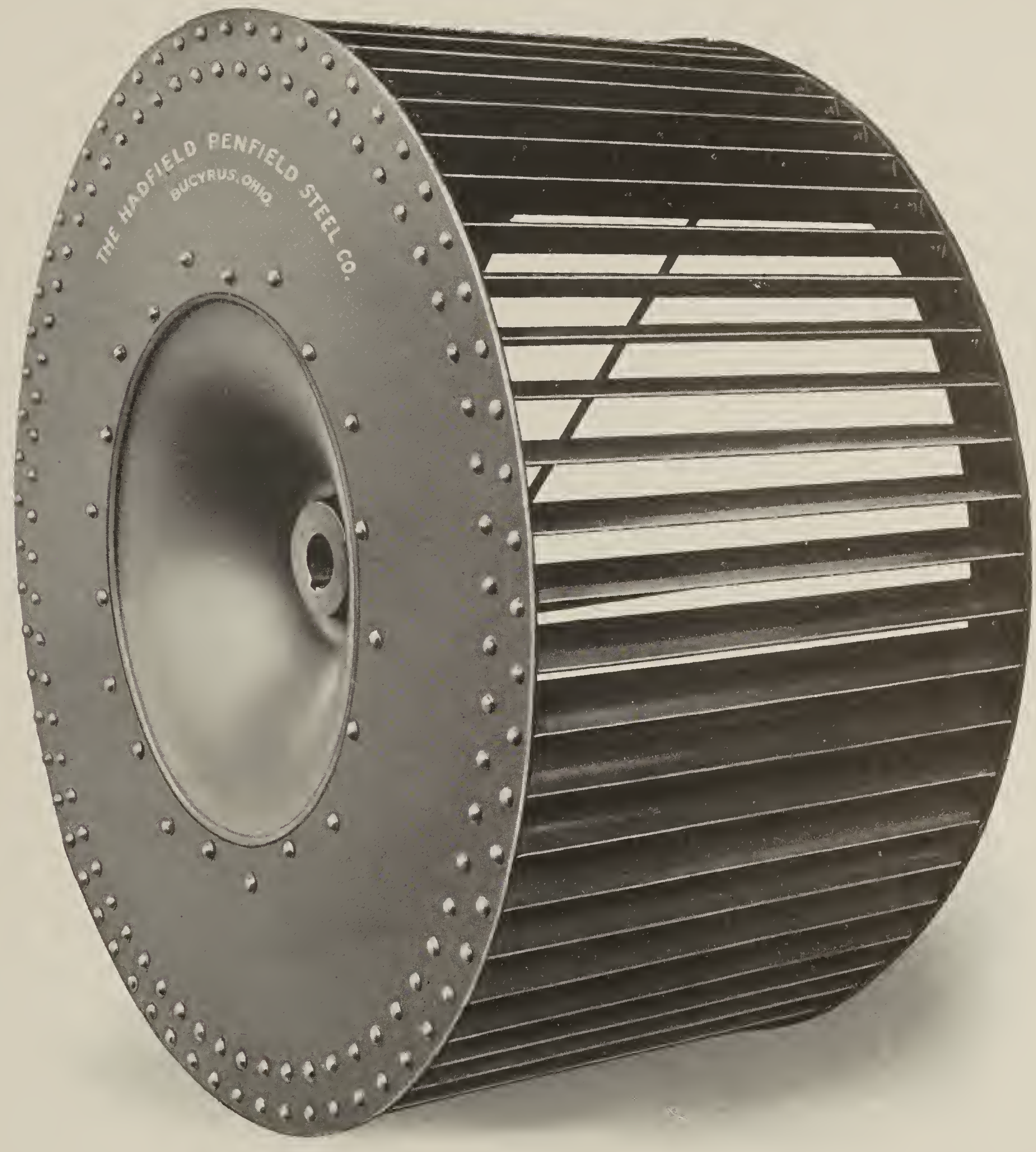
Socket and Lids for Fire Holes and Gauge Holes on Top of Haigh Kiln

Smoke-Duct Hood



American Multiple Blade Fan With Steel Housing and Water Cooled Bearing With Pulley For Belt Drive

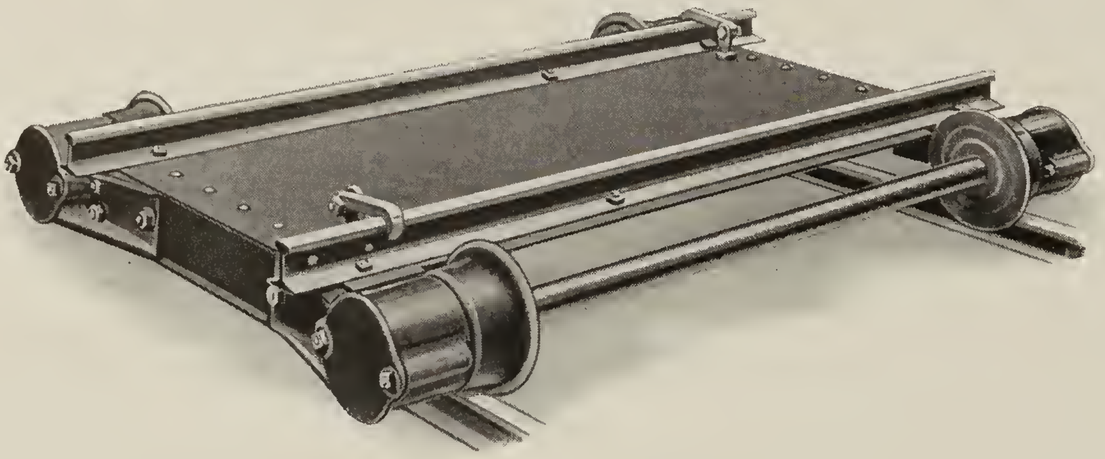
THE American Multiple Blade Fan is used to create draft for burning the Haigh Continuous Kiln. Designed and installed so that the proper draft may be secured at all times to insure best results in burning the ware.



American Multiple Blade Fan Wheel

American No. 279 Continuous Kiln Transfer Car

THIS transfer car is built especially for use inside of the Haigh continuous Kiln. It is compact, solid and substantial, designed with small wheels and made narrow to permit running the loaded car close up to the face of the setting in the kiln and make it very convenient for the tossers to pass the brick to the setters. The deck or top of the car is a steel plate 30″ x 60″ x ¼″ thick, securely riveted to the end frames which are made of 3″ x 4″ x ⅜″ angles. The car is built with roller bearings, each bearing having eleven pins ¾″ diameter and 4″ long.



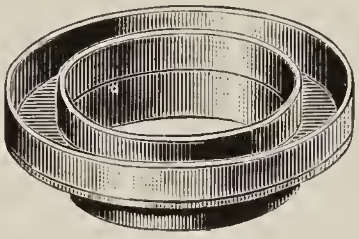
American No. 279 Continuous Kiln Transfer Car

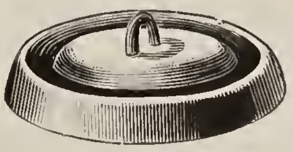
SPECIFICATIONS

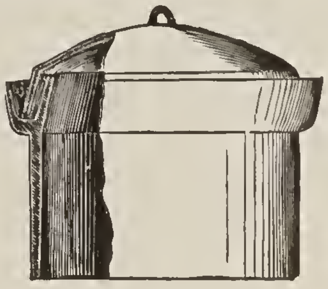
Length over all	3′ 9″	Wheel tread	2½″
Width over all or length of rail on top of car	5′ 6″	Track gauge on top of car	2′ 0″
Distance from center to center of wheels	3′ 1″	Track gauge of transfer car	4′ 0″
Diameter of Axles	2″	Distance from top of transfer track to top of rail on top of car	7½″
Diameter of wheels	6½″	Weight	678 lbs.

Iron Work for Kilns

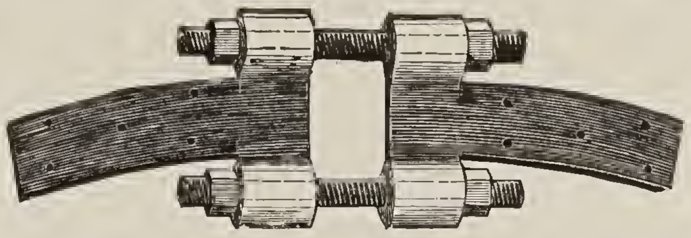
The W. A. Riddell Company is supplying all necessary iron work for kilns. Cast rings and covers for crowned kilns. Grate bars and kiln band clamps. Make your needs known.



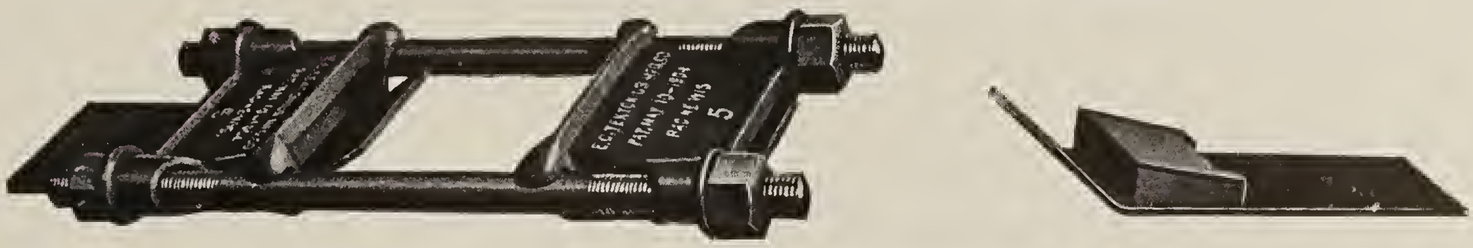




Cast Steel Kiln Band Clamps



Tecktonius Kiln Band Clamps

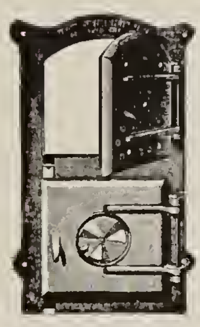


Kiln Band Clamps and Complete Kiln Bands Furnished as per Requirements

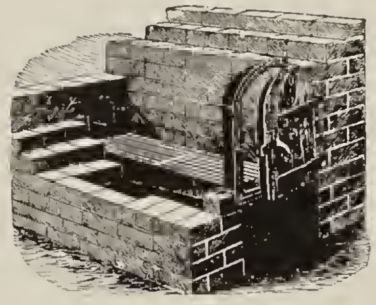
Grate Bars

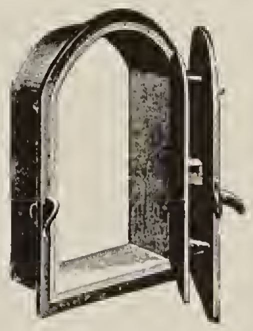
We furnish Grate Bars in various sizes according to requirements.

Kiln Doors

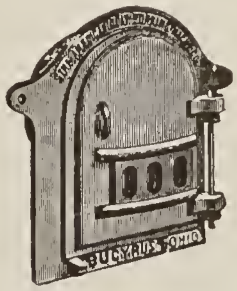


No. 4-A Kiln Door





No. 1-A Kiln Door



No. 2-A Kiln Door

These we make either single or with a protection plate on the inside, which can be easily replaced when burned out. We make the following sizes:

No. 1-A—Plain, flat door, with or without sliding draft, as desired. Size of opening, 13″ x 17″.

No. 2-A—Convex door. Size of opening, 13″ x 17″.

No. 4-A—Furnace and ash door combined, as shown in cut.

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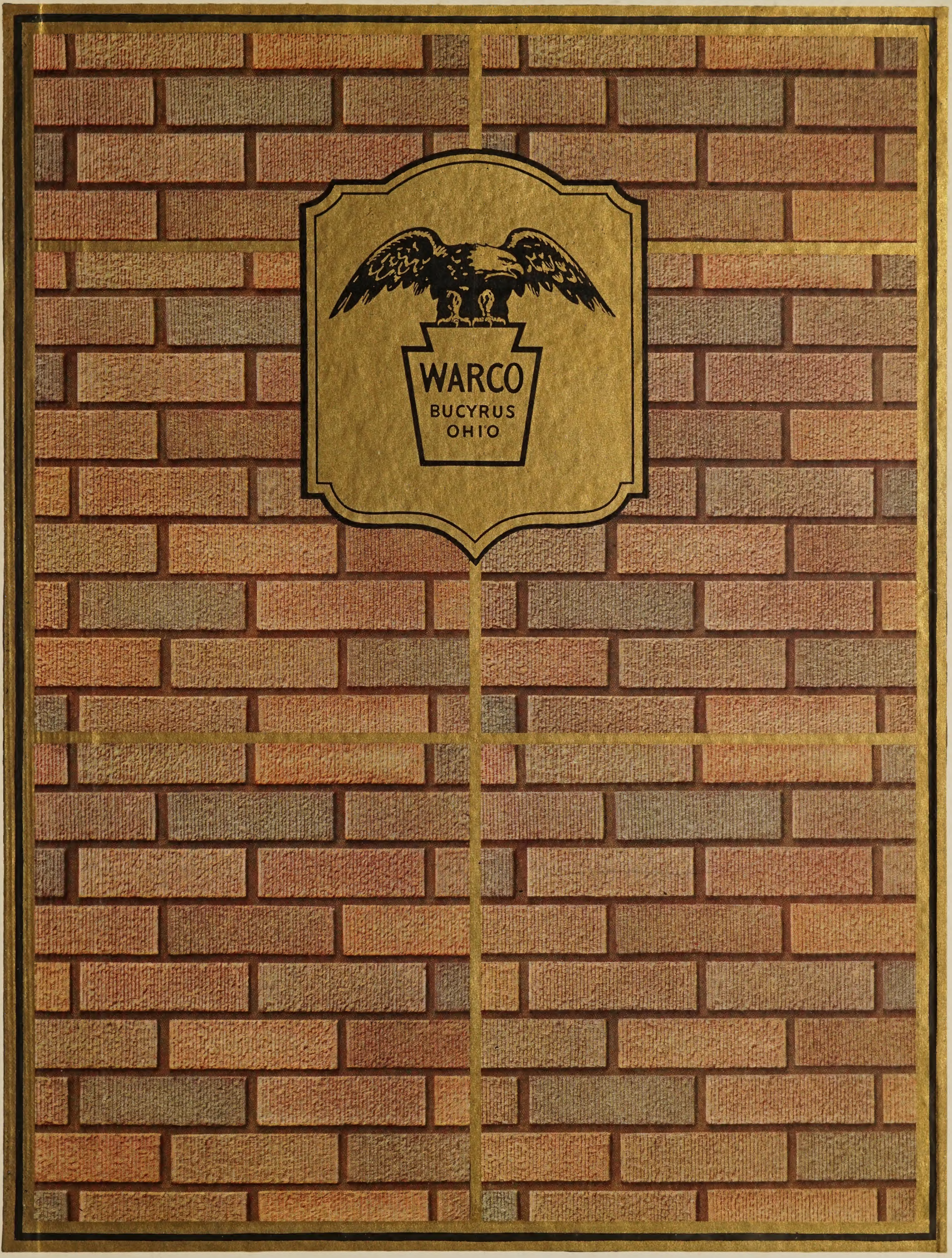
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